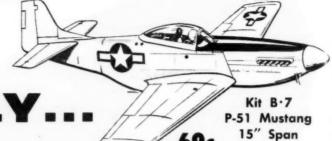
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JAY P. CLEVELAND, President and Publisher

DECEMBER 1955

Vol. LIII-No. 6

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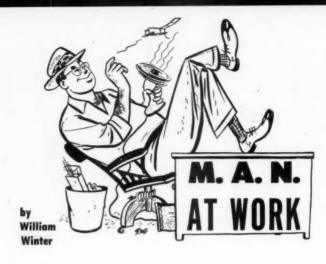
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For three breathless weeks had wondered what happened to the American team that went to Germany for the finals in Wakefield, FAI and Nordic. From the AMA had come prompt word that the U.S.A. had not placed in any of the events. Had the boys lost their models? Taken the wrong plane to Calcutta? (The most spectacular results of this year's competition were the protests, charges, counter charges, publicity releases and fireworks growing out of the Eastern Elimination.) So finally, via Pan American, arrived Bill Dean's pictures and copy reporting the world's most important model contest. To sum it up, competition was terrific, the team gave it the old college try, but it wasn't our turn. The full story, pictures and drawings begin on page 9.

From the American Consulate, Penang, in Malaya, Public Affairs Officer Frederic A. Fisher writes "Our only information here on model activity back home comes from MODEL AIRPLANE NEWS and, since your coverage is devoted to contest flying and superlative models produced by the champs, the impression is created that all Americans pursuing the sport must be extraordinary fellows.

"I am the only American in our group of five controlline addicts," Fisher laments, "and I am afraid that I sometimes puzzle my friends for failing to measure up to the standards set by contest modelers in the States." He then goes on to say that power units are British or German Diesels, such as the Oliver Tiger, ED 2.46 and Webra Mach 1. Cheer up, Fred. If Ye Editor could be smuggled into a diplomatic pouch (king size) for Penang, we'd get you off the spot. Your fellow fliers really would be puzzled!

If you (Continued on page 6)

NEXT MONTH'S COVER Pfolz D-12



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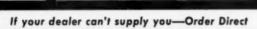
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MAN at Work

(Continued from page 2)

judge AMA leaders by results, you've got to admire Pop Robbers (and you can't forget Mom Robbers, either). Pop is the spark plug of the Western Associated Modelers, which includes numerous active clubs in Northern California. Since you'd need Chicago telephone directory thickness in a magazine that reported contest results, always regret that the regular reports from the Robbers can get no more than an interested editorial scanning.

"It has been my pleasant job for many years to assist sponsors to set up contests in this area," Pop tells us. "Knowledge is required of the popularity of the different events, about what attendance may be expected and what would be a good trophy distribution for the events held.

"We break down our contest results and maintain a record which will show the trend of modeling popularity as well as

"We break down our contest results and maintain a record which will show the trend of modeling popularity as well as the age trend in participation. WAM operates under the ability system of segregating contestants."

Last summer the WAM cooperated with MAN by breaking down into AMA age classifications (which is the way the rest of the country does it) the entry list at the Annual San Leandro Line Twisters. Uncle Sam doesn't leave many Seniors around, that's for sure. One trend was toward the smaller motor, Class B taking a strong lead over Class C. At their Alameda contest a series of 100 mile races were held with as many as five fliers in the center, each with two mechanics for refueling, and 1,400 laps required (with never a tangle, lost plane or a drop-out before finish). With one exception, all the engines were Torp .29's.

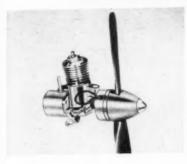
Mister Free Flight (that would be Carl Goldberg) has been doodling again. Carl appears to move slowly but is one of the most patient and painstaking designers we know of (although Lou Andrews gives him a run for his money). The Sailplane wing and tail, for example. Why do guys use these surfaces even today with their own fuselages, when the plane made its debut before the war? Remember seeing 11 sets of test wings on the wall of Carl's cubicle (all designers live in cubicles just as detectives smoke crusted pipes) at Comet, long before he had a company of his own. Glide tests had been made in an armory. Further back he tried the indoor parasol set-up on a gas model and came up with Valkyrie, the most beautiful looking gassie that ever was built (1,400 pieces in the wing, was it?). The Zipper resulted from a bet that he could fly a Foster .99 on a 4½ ft. ship, unheard of in the 'thirties. There were many more. The Interceptor—and that was the one that set Denny Davis to thinking.

Now before us is a set of blueprints for a Half-A Nimbus—a dozen scattered free flighters have been flying "field test" Nimbuses made from duplicate prints. Carl is using a section that fits within a seven per cent thick rectangle, including one per cent undercamber. He feels that five per cent thick airfoils may give best performance, if we learn to make the wings. Indoor gliders have such wings. Low wing loadings and aerodynamic cleanness required, Carl believes. Another design cooking, as simple as the Spacer (Sal Taibi, MAN, 12/54) and called the Simplicus. Tip: see Nimbus in Air Ways, November, 1955.

When the boys of the New Britain, Conn., Model Airplane Club decided to (Continued on page 44)

TRADESHOW

MONTHLY REVIEW OF NEW PRODUCTS, OTHER INTERESTING ITEMS WORTH ATTENTION



► Self-Starter: Pull the cord and Wen Mac's .049 starts. Released, cord snaps back into engine ready for use. Ideal for beginners and for boat installations where starting is more difficult. Engine comes broken-in, for beam or radial mounts. Wen-Mac Corp., 2240 Centinela Ave., Los Angeles 64, Calif. List \$6.95.



▶ Multi-Tester: Designed expressly for RC, Aristo Craft tester gives amp readings up to 1,000 mils, ohms to 10,000, as well as voltage to 200 DC. Pocket-sized, includes test leads. Accurate to within 2 per cent, plus or minus. Available through Polk's Model Craft Hobbies, 314 Fifth Ave., New York City. Sells for \$14.95.



▶ Old Time Wheels: For those WWI crates or planes of the old days, Scalemaster Models, Inc., 28 Iowa Ave., S.W., Grand Rapids, Mich., have 2½ in. diameter wheels in 1 in. scale. Hubs are painted aluminum but will take any type of colored dope or paint. Tires are black. Available at your dealer's for 98c.



▶ Bag of Kits: Christmas Gift Packages by Monogram Models, Inc., Chicago 32, include selections of popular kits arranged in duffel bags patterned after overseas airline bags. The combination shown features the PBY, B-25, DC-3, B-26 for \$4.19. The \$6.98 set includes PBY, B-26, B-25, DC-3, Midget Racer, Dipsy Doodle, Ford V-8. Seven other Monogram Christmas Gift Packages.

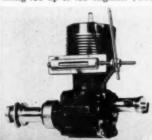


▶ Piper Super Cruiser: Long a favorite in the flying scale event, Berkeley's Super Cruiser has been redesigned. Formerly, the body was meant for rubber power but now die-cut sheet parts replace longeron and cross-piece construction. Twice winner of the Nationals, kit still makes up the 35½ in. airplane. Prices at \$2.95, manufactured by Berkeley Model Supplies, West Hempstead, N.Y.



▶ Nieuport 28: Captain Eddie Rickenbacker's personal "28" has been introduced by Sterling Models, Philadelphia, Pa., as a U-control model powered by engines of .23 to .35 displacement. Span 33 in., kit completely prefabricated, with die-cut plywood and balsa parts. Formed scale aluminum cowl a distinctive feature. Large, colorful decals, step-by-step plans, greatly detailed instructions. \$5.95.

▶ Roto-Valve Throttle: New type throttle opens, closes exhaust port for complete range of speed from 1,500 rpm. No time lag, clean, effective. Good for RC or U-control. Made by Roto-Valve Co., distributed by Joe's Hobby Center, 9830 Wyoming, Detroit, Mich. Two models fitting .15 up to .65 engines. \$4.95.



▶ Dumas Cobra: Chris Craft's flashy 18 ft. Cobra reproduced as an exact replica for inboard engine and radio control by Dumas Products, 2114 S. Alvernon Way, P.O. Box 6096, Tucson, Ariz. All parts die-cut, complete fittings. Company makes rough, smooth water tests for water tightness, balance. \$6.95.



► Atomic Sub: Operating model of the Nautilus by Scientific Model Airplane Co., 113 Monroe St., Newark 5, N.J. is 18 in. long, rubber-powered. Equipped with diving vanes, the model submerges to periscope depth, then automatically resurfaces. At \$1.98 the kit includes one-piece balsa hull, formed tower, etc.



Have

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Now build a model that's double fun - fun Now build a model that's double fun — fun putting the molded plastic parts together — even more fun operating the thrilling working features. Only Monogram has it. Get this new all-plastic scale model of the Air Force Douglas B-66 Twin Jet Bomber. Make the bomb bay door open and the "A" bomb drop. Set the "radar-controlled" tail stinger cannon. Build it for flight or landing with full-out or retracted landing gear. Enjoy too, its amazing detail — far more than you ever saw in a plastic model before. This is the last word fellows. Get the B-66 Plastikit from your favorite store today.

Kit (P-10) includes, all plane parts, Supersonic nose boom, 3 sculptured figures — pilot, bombardier, and navigator, working mechanism, bomb, movable "Iradar controlled" guns and authentic U. S. Air Force decals.

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CHAI

Forward-finned FAI airplane by Austria's Ernst Blanche does neat VTO on its 2.46 ED Diesel.

WORLD CHAMPIONSHIPS

by BILL DEAN

Held in West Germany, September 3-5, the finals embraced all three free flight events for the first time. Both Wakefield and Nordic were taken by Germany, FAI gas by Great Britain. Competing: 224 entries and 23 nations.



Wakefield winner, Gustav Samann of Germany, won the seven-man fly-off. Design previously had won three of the German Nationals.

VTO take-off, with accent on the V, made five perfects for Britain's Michael Gaster who then went on to beat two others in three-way fly-off.



▶ This year's World Championships for Wakefield, Gas and A.2 Gliders were held at Mainz-Finthen Airfield, Western Germany (September 3-5), with the U. S. Air Forces in Europe acting as host and the meeting being run jointly by the German Aero Club of Frankfurt and the American Academy of Model Aeronautics. As may be expected, running all three FF events in a group for the first time resulted in a mighty big contest. In fact, all previous Internats were overshadowed, there being a total of 224 entries from no less than 23 countries. Czechoslovakian teams flew in all events and even Russia sent along a couple of observers.

Top honors for '55 went to Germany—with Gustav Samann winning Wakefield in a seven-man fly-off against Sweden, Italy, Yugoslavia and Czechoslovakia—and A.2 Glider champ Rudolf Lindner repeating his last year's success with basically the same design. Britain triumphed in Gas this time—with Michael Gaster beating the Argentine and Canadian opposition in a

Master of towline technique was Germany's Rudolph Lindner, repeat winner. Kept ship top of launch for one minute on the fifth flight.





Pepsi in hand, Russian observer watches '54 winner Alan King set Wakefield. Alan jinxed.



The 1953 Nordic winning model, Hans Hansen, from Denmark, nice launching shot. Tied 9-10.



Long way from home was contest director Pete Sotich of Chicago Prop Nutz. Quiet moment rare.



Top man for America in Wakefield, Bob Champine 20 seconds from five perfects, 11-12 tie.



Otis Goss was top U.S. man in FAI. He had several maximums, then 178 and 148. Not enough.



Old payloader Herb Kothe surprised by taking 7th in Nordic, real feat since Europe sharp.

three-man fly-off—and also took second in Glider, with Bob Gilroy just a scant six seconds behind the winning score of 886. Team trophies went to Sweden in Wakefield, Britain in Power and Italy in Glider.

What happened to the American boys? Well, their best showing was seventh in Glider, ninth in Power and 11/12th in Wakefield, out of fields of 80, 74 and 70 respectively. The U.S. teams flew good ships but had their share of bad breaks, especially in Wakefield. If it's any consolation, several winners of previous Championships also fared badly this year -Hans Hansen ('53 A.2) placing 9/10th, Oscar Czepa ('51 A.2) 52nd and Alan King ('54 Wakefield) down in 63rd-which just goes to show that, as long as we have thermals and downdrafts, there's nothing more unpredictable than model plane contests.

This year's events were run on similar lines to the procedure

adopted at Cranfield in '53 and continued at the Long Island contest last year. That is, each two-hour round was split into four 30-minute periods, with only one member of each team being allowed to fly in any one period—thus ensuring that each team encountered all weather conditions prevailing during each round. Flying started bright and early each day at 0800 and except for two half-hour breaks for full-scale aerobatic displays on the second and third days, continued right on for ten hours!

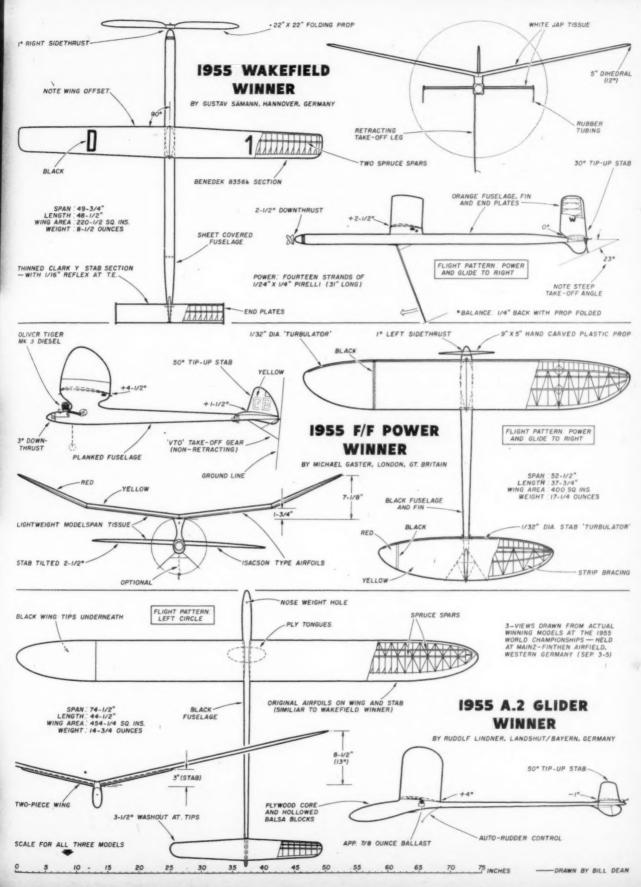
Apart from a few showers on the first day, weather conditions were nearly perfect, there being plenty of thermals about and only the lightest of breezes. With 180 seconds counting as a maximum, there were a tremendous number of five-flight totals of 900 (or near 900) seconds. Well over a third of all the flights made were maximums, so you had to be good to get a place near the top of

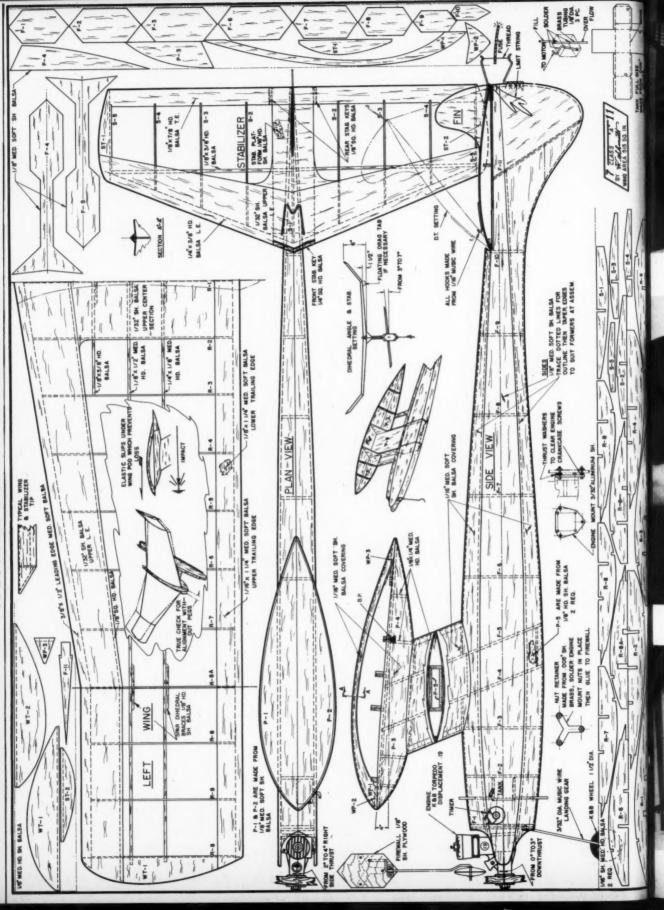
the list. For example, with a total score in Wakefield only 20 seconds below the maximum possible, U.S. Team Manager Bob Champine found himself in 11/12th place!

After some hectic midnight oil burning on the eve of the contest by the processing officials (ably led by Contest (Continued on page 47)

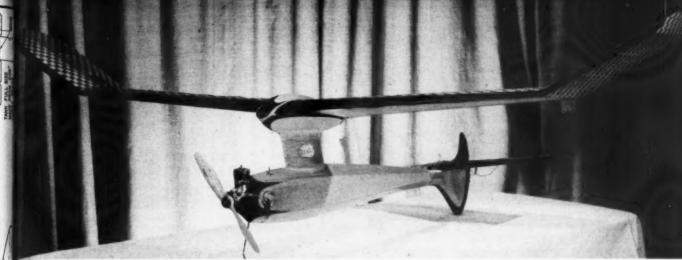
Only woman in event was Odette deBare, Belgium, who tied 21-22 against 70 Wakefields.







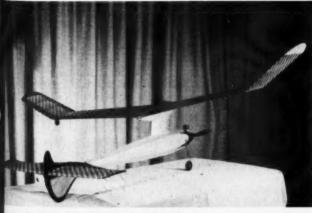
FULL SIZE PLANS AVAILABLE. SEE PAGE 50.



No rocking, no shifting of wing mount permissible for windy weather airplane, hence odd but rigid pylon design. Under fin aids stability.



Silk—and how did you line up those checks, Fred?—a must in tree country. Smaller stabilizer desirable, gives better stall recovery.



To bring down loading of modern jobs, the areas are increased, says author, which makes for folding wings and three-piece fuselages.

SEVEN-ELEVEN

By FRED W. SCHMIDT

It takes a special breed of free flight ship to fly well and stand up in New England where the wind always blows—well, almost.

▶ This ship has been designed for rough New England flying. The terrain and the weather have caused many of our ships to be literally torn to shreds whenever they hit a large bush or ended up in a tree. Most of the planes today are built with extremely large wing and stabilizer areas, so in order to bring down the ship's weight, strength is sacrificed, resulting in folding wings and three-piece fuselages. The "7-11" is constructed more strongly with a smaller wing area, without sacrificing the gliding ability of the ship. Also, a smaller stabilizer area results in a much faster recovery after climb; it is the type of ship that can take more than its share of punishment.

Start fuselage sides by tracing dotted lines upon % in. medium soft sheet balsa; cut and cement tail end together. Place in formers F-1 through F-11, omitting F-4 and F-5. (Caution: keep fuselage in line.) Trace and cut out two P-5's and formers F-4 and F-5. Cement together, forming box spar for pylon; then cement securely into fuselage, being certain it is in the right position according to plans. Next, finish cutting out parts for pylon pod and assemble. While this is drying, cut in half a 1/16 x 3 x 36 in. medium soft sheet of balsa and proceed to cover the top half of the fuselage. Start by notching out for the box spar and working from either side, cement top right side plank in place first. After this has dried, trim to suit formers and to fit flush with left side plank. Apply left top plank, following the same procedure as for the right side plank. Next, plank top of pylon pod, following same procedure.

You are now ready to apply the pylon covers. This is where a great deal of patience is required. Cut out the approximate shape for (Continued on page 42)



Material used for film stencils is available in any graphic arts or camera store. With these materials go most explicit instructions.



To Separate the art work by colors before exposing on film stencil.

Here, shown clearly marked, three colors—black, red, yellow.



5. All areas excepting one to be printed covered inside with your masking tape.



6. When squeegee pulled across screen, color squeezed through to the paper beneath.



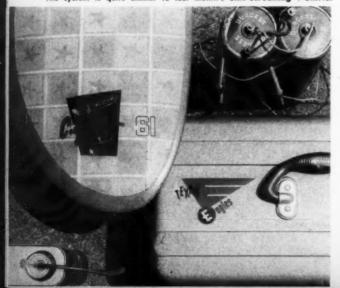
7. Use stiff cardboard registration guide for accuracy in all of colors. Pick your own.

Nothing dresses up an airplane as a colorful decal. If your hobby shop doesn't have the decal you need, resourceful you knows what to do.

Make Your Own DECALS

Here's how the decals look after transfer to a stab and a tool box.

The system is quite similar to last month's Silk-Screening T-Shirts.



By HARRY H. ENGLISH Photography by PAUL GILLIAM

▶ How many times have you been unable to obtain a certain size insignia decal for that scale model in the local hobby shop? Or how many times has your club voted to buy decals with the club's emblem only to find upon investigation that the club's treasury couldn't stand the price? Now you can make them yourself!

In last month's MODEL AIRPLANE NEWS, we

In last month's MODEL AIRPLANE NEWS, we described the techniques of silk-screening T-shirts. While using the silk-screen process on fabric is much the same as in the making of decals, there are some differences, too.

The frames used in decal screening are similar to those used in making T-shirts. Probably the only difference here is that several images may be "ganged" on one screen and printed one at a time by shielding with masking tape all but the desired image. The silk used in decal making should be much finer in mesh than that used for fabric printing since much finer detail is desired. Organdy is not suited to decal printing. We rec-



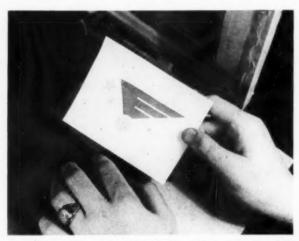
2. Silk is applied wet with staples or small carpet tacks. A stapler shown. Save work.



 The completed screen ready for hinging to work board. Notice squeegee. Applies ink.



4. The screen is hinged securely to the board. Ready for the tape-up operation.



 Position of the cardboard registration guide is changed until the next color is located in a corresponding place in emblem design.



9. The top clear lacquer coat may be applied through a portion of a screen taped to the approximate size of the design. You with us?

ommend the use of a mesh at least as fine as 18 gauge silk. Apply in the same manner as for the T-shirt screens, being sure all sizing or filler has been removed from the material by washing in warm water.

The art work layout for making decals must, of course, be much more accurate and more care must be made to keep all corners sharp and regular. Screening on smooth decal paper shows more of your errors than would be apparent with a large, bold design like the club emblem on the texture of a T-shirt.

The color separation is the same as for your T-shirt design. We did ours photographically but the use of tracing paper for this step of the operation is just as good. Each area of the design which is a different color is traced very carefully on smooth tracing paper and then filled in with black India ink. Try to get the ink on regularly so that the ink does not appear piled up when the paper is held to a light for inspection.

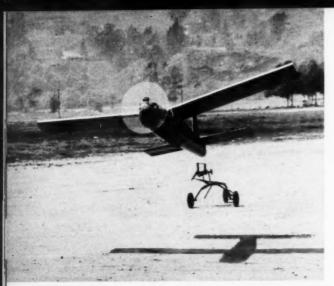
A great deal more care is required in making the film stencil than for that used with T-shirts. The use of a sheet of glass, tightly pressed, during exposure of the screen process film is a necessity to prevent light from fogging under the edges of your art work and causing fuzzy edges on the final stencil. As previously stated, most of your separate image designs may be exposed on one sheet of the film at one time since decal designs are usually not very large. This "ganging" proves quite economical, not only in film, but also in allowing the use of only one frame and silk.

A commercial decal paper is available in art stores

in almost any locality. A sheet 30 x 40 in. usually sells for about 30c. These sheets are cut into the desired sizes for your particular needs. Be sure the corners are cut squarely for upon this squareness depends the accuracy of register of the various colors during printing. Commercial decal inks are available but we prefer the use of oil base bulletin colors which do the job as well and are considerably cheaper. A top coat of synthetic clear decal lacquer is applied after all other colors are on the decal paper. This "ties" all the coats together and holds the decal together when it is transferred. Without this top coat, the colors seem to float off separately and break up when you try to make the transfer. A good top decal clear, CANDOC Synthetic, is made by Cudner and O'Conner.

Hinge the completed screen to the workboard as described in the shirt article, allowing about 1/16 in. for cardboard registration guides. Use masking tape or brown paper to tape out all areas of the screen except the one particular area to be printed. Since the decal paper is thin and apt to curl, it is wise to incorporate a small lip extending over the two edges of the L-shaped registration guide. This not only helps assure perfect registration of every decal, but also prevents the decal from sticking to the screen as it is lifted after printing.

As before, the registration key or guides are changed for each color change. Take a little time getting these changes in the keys made correctly and use plenty of newspaper for test prints. We (Continued on page 41)



Aerolab RCAT (three pictures), RC trainer for drone operators, attains take-off speed by rounding a pylon several times on ground, drops three-wheel cart. Span 6 ft., 13 in. prop, 12,000 rpm on a Fox .59.

Radio Control News

By E. J. LORENZ

A few more fascinating coverages like this and none of us will have time to repair.

CLUB NEWS

► For our final club report of 1955, we hope you'll enjoy reading about the "Grand-daddy of all RC gettogethers" held at Selinsgrove, Pa., over the Labor Day week-end. Before going into the details on the flying sessions of this fifth annual event, we'd like to make the following announcement, as discussed at the business meeting. This RC event is in no sense of the word a contest, but strictly a get-together of RC fliers in the East. It is sponsored by the Pittsburgh Flying Circuits whose secretary is Maynard Hill, 309 Princeton Drive, Pittsburgh, Pa.

Aileron control on biplane was experiment by Bob Miller, now of Levittown, N.Y. Says ailerons should be longer, farther from center line.





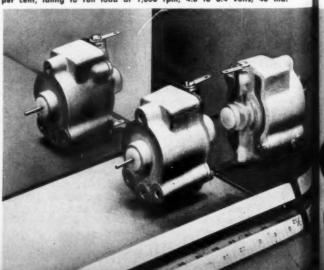
Ground crew prepares for a take-off. Note starter, plug-in tester. Five channels, up-down, right-left; fifth prevents release of chute unless interrupted. The parachute pops either intentionally or automatically.

In the past, this event was open only to the so-called "charter members," a group of about 40 persons. However, new faces have appeared each year and the 1956 event will have relaxed restrictions. It should be pointed out that there has been no intention of trying to maintain a closed event or one which discriminated between fliers. Rather, the event was limited to a small group in order that lodging accommodations and flying time could be more efficiently utilized.

The increased number of motels in the area, and a flying plan to which, to date, there have been no voiced objections, make it possible to open the '56 event on the following basis: Spectators or observers may come in unlimited number. Fliers will include those in the original group plus a certain number chosen from each club that writes to Mr. Hill. Each club should state the number of members it has, when writing for details. After tabulating the inquiries, the club will be notified as to how many members will be entitled to attend.

Here again, it should be understood that this event is put on by a club whose interests are in promoting radio control of model aircraft. They make all of the arangements for the three-day event and see to it that the flying is conducted in the most efficient manner. It can readily be seen that to open this event to, say, 100

New electric motor, Kinder Co., maintains speed regulation within one per cent, idling to full load at 1,800 rpm, 4.6 to 6.4 volts, 40 ma.





Storing recovery chute. Speed is 60 mph, range 20 miles, weight 16 pounds, mostly radio and batteries. Aerolab radio, servos. Fuselage is metal; spruce, balsa, nylon on wings, tail. Catapult, boom launchers, too.

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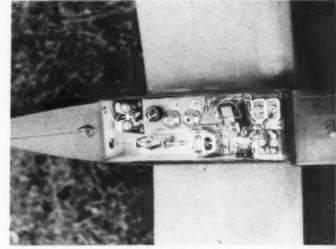
fliers, all of whom operate on 27 mc, would create quite a problem. We personally believe this is the best run event of its kind that we've ever seen. Flying is orderly, everyone gets a chance to fly and much information can be learned by meandering around the field and at the nightly bull sessions. Get your "order" in early for the '56 event and really find out what makes RC tick.

And now what happened at the flying sessions this year? There were about 40 fliers on hand and hundreds of flights a day were made, using 21, 27.255, three frequencies in the six-meter band, 220 and 465 mc. It was rare not to see at least two planes in the air at once, with the number reaching four several times. The one exception which we witnessed was the flight of Ernie Kratzet's 6 ft. 13½ lb. Fox .59-powered biplane. All eyes concentrated on this solo flight of the big green bipe, whose average speed was about 40 mph. A Bramco reed unit and Bramco throttle gave excellent control at all times.

Speaking of reeds, this seemed to be the most popular method of obtaining multi-channel control. In addition to the Bramco unit, Schmidt receivers and transmitters were well represented, with an occasional home-made set. Frank Schmidt turned in some beautiful flights with his "Sunday ship," a 6 ft. Cessna. Several Cessna

CONTINUED NEXT PAGE
This is a six-reed bank manufactured by Bram Citizen-Ship Radio C

Citizen-Ship Radio Corp.'s new, small transmitter handles like flashlight. Kit or assembled.



Installation of gear in Brayton Paul's (Baltimore) low wing, using his own Fly-Ball actuator. Lorenz two-tube receiver, and Sigma 4F relay.

Mrs. Paul with Fly-Ball Special 3 at Lancaster, Pa., contest. Ship ROGs perfectly, has a long design development. High stabilizer gets results.

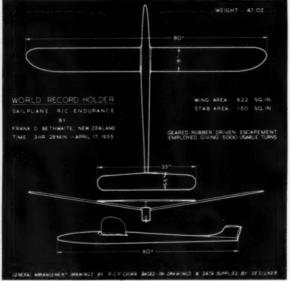


Two and three (shown) sensitive reed banks by CG Electronics Corp., 250-400 cps, 7,000 ohms.







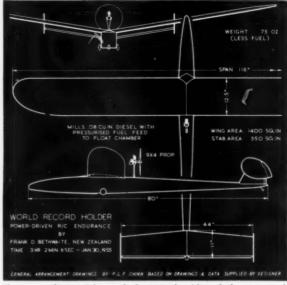


Two amazing airplanes by Frank Bethwaite: his glider, above and power plane, right. Both have remained in air for better than three hours.

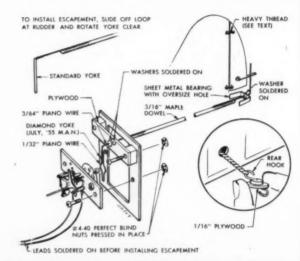
models, a Cub, Aeronca and several other scale jobs added an additional touch of realism to the flying. When it comes to cutting a pylon, don't make any bets with Walt Good and his old Rudderbug. Using his simultaneous proportional control system, Walt was able to stand the Bug on a wing tip and rotate with no loss of altitude. Out of an estimated 600 flights, less than one per cent were fouled up because of radio trouble. Reliability is increasing and so is proficiency in the use of multi-channel equipment. Multi-channel equipment in itself is not a cure-all for obtaining better flights, but proper handling of the equipment opens the door to new thrills in RC flying.

proper handling of the equipment opens the door to new thrills in RC flying.

From Geoffry Pike, Nottingham, England, we received two reels of tape recording which contained the following informative news. First of all, the first reel was interrupted by a Canberra jet doing a vertical climb over his workshop and then suddenly cutting off before peeling around, a characteristic maneuver. We thought the tape recorder blew a filter condenser. The main point of interest is his attempt at developing a reed bank which would not (Continued on page 36)

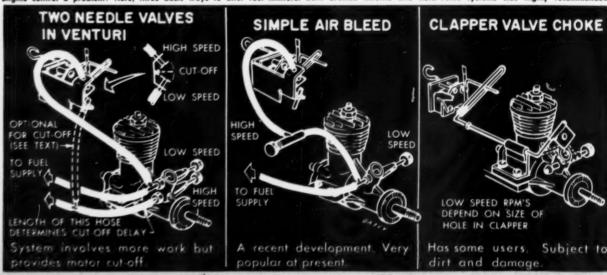


The power plane weighs nearly five pounds without fuel, spans nearly 10 feet yet, incredibly, takes off on a Mills .08 Diesel, 9 x 4 prop.

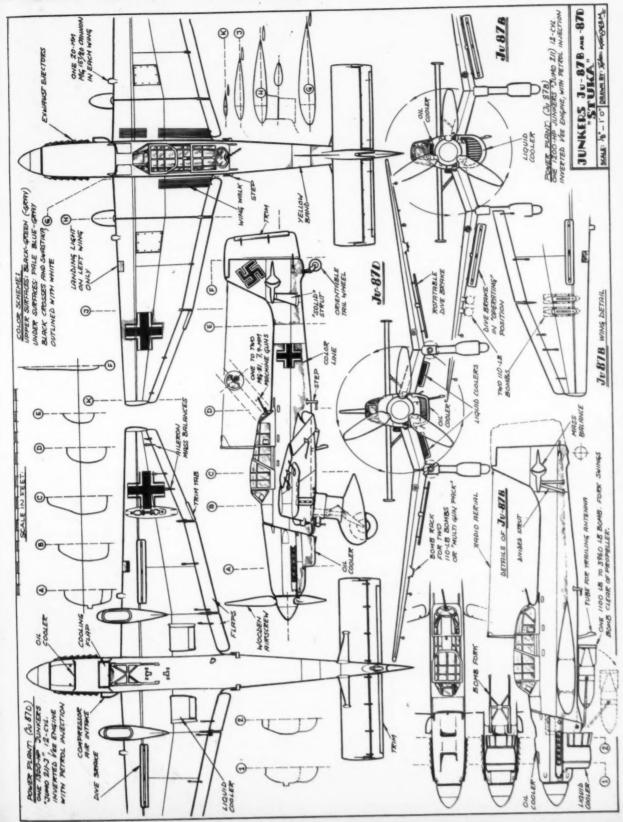


Torque rod installation as practiced by Howard Bonner. Escapement is removable. Objects to tubing and wire bearings, uses stitch hinges.

Engine control a problem? Here, three basic ways to alter fuel mixture. Both Bramco throttle and Roto-Valve systems also highly recommended.



Planes Worth Modeling—JUNKERS STUKA

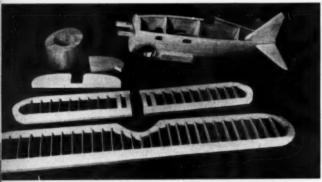


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Flipping the prop on his F3F-3, the author prepares for test flight. He found an old three-bladed 10 x 6, real looking and most effective.



Partially finished components reveal sturdy structure. Vertical backbone giving fuselage profile is a particularly interesting detail.



Adding to the realism are many worth while details—recessed landing gear well, for example. Inverted motor is almost completely hidden.

By PAUL J. PALANEK

Delightful flying scale model of famous Grumman biplane fighter is a realistic flier on .29, .35. Was built to last lifetime.

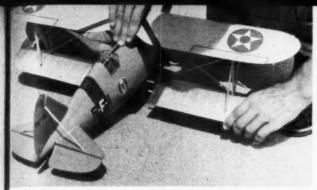
▶ The stubby Grumman deck fighter, F3F-3, offers a wealth of scale detail for the die-hard scale fan and a well-balanced arrangement for the rough and ready every-day controlline enthusiast.

During the 'thirties the F3F-3 boasted a 1,000 hp Wright-Cyclone and speeds in excess of 250 mph. This design carried an arresting hook (for you carrier event fans) permitting shipboard landings.

Unavoidably, the scale controlline fan has to be a very cautious person in order to preserve the fruits of his labor. Since so many flight dangers plague the scale fan we have tried to help him in this design by eliminating some of the dangers of nasty crack-ups. The model literally comes apart at the seams. Both upper and lower panels are removable. This permits the wings to give under severe landings, whereas a rugged mounting would rip a wing or do excessive damage. To date the only repair work required for our flying F3F-3 is the patching of some ripped Silkspan. The struts, both cabane and "N," just bend and twist with the load. Another feature permits a fold-away model, easing the many problems of transportation.

easing the many problems of transportation.

Our model sports a .35, but there is enough beef to carry higher displacement engines. The fuselage is of conventional crutch design using % in. sheet for both



Knock-off lower wing panels minimize damage from rough landings that ordinarily batter a tip. The metal N struts flex, permit detachment.



Completed framework ready for covering. Author used Silkspan but if you win quiz show prize, silk would be well worth while investment.

crutch and formers. Cut out the center portion of the crutch to receive the bellcrank and motor bearers. Partially plank the fuselage using ¾ x ¾ in. balsa strip. Secure the ½ in. square hardwood bearers in place. Also mount the ¾ in. plywood bellcrank platform as shown. A 3 in. bellcrank is employed. Further plank the fuselage, allowing sufficient space for added assemblies.

At this point in construction the tail surfaces should be worked down and installed. Cut away a section of crutch and cement securely both the stab and fin. Use ½ x 3 in. sheet balsa for all tail surfaces. The elevator is fitted with a Veco horn and cloth hinges. At this point, solder in place the 1/16 in. dia. wire pushrod.

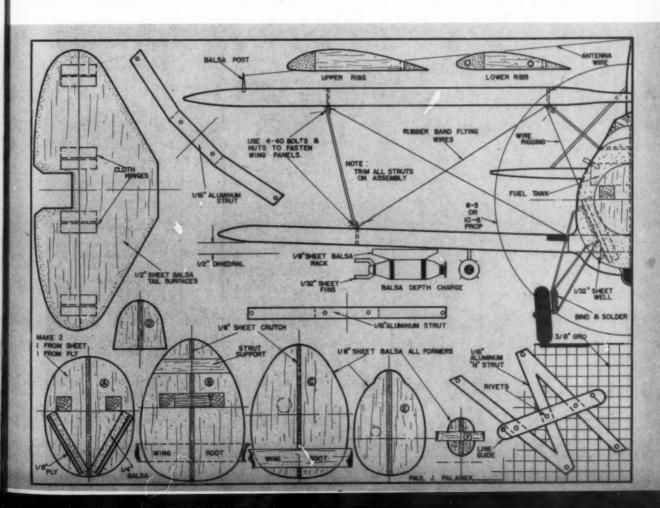
Install the tail swivel wheel using 3/16 dia. dowel and 1/16 in. wire. Having planked to the bottom of the cabane strut spreaders, the ½ x 1 in. balsa spreaders

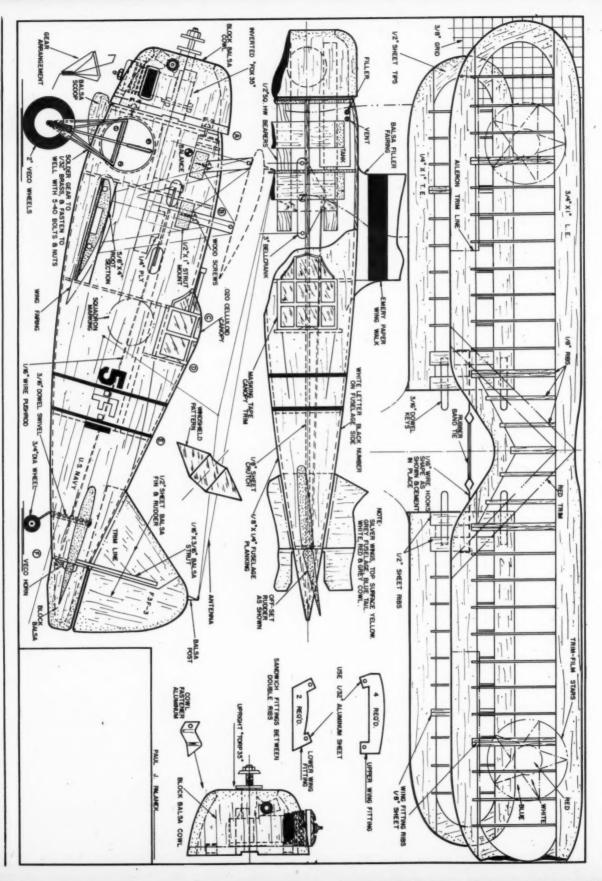
can then be installed with the aluminum struts screwed in place. Before completing the upper portion of the fuselage, secure a 2 oz. Maeco fuel tank in place, and solder the 1/32 in. lead-out lines to the bellcrank. Complete the top side planking.

The wheel wells are next on the list, being made of 1/16 in. sheet, with a 1/32 in. wrap to form the shell. Cemented securely between formers A and B is a lay-up of balsa and ply to secure the gear in place. Once this lay-up is made, cement the wheel well in position and allow to dry. While it is drying, fasten behind this assembly three 5-40 nuts to each side for fastening the gear assembly. Finish planking the fuselage.

Having previously made arrangements for the wing root cut-outs, secure the wing (Continued on page 46)

FULL PAGE PLAN ON NEXT PAGE





Round-the-Pole JET



The "airplane" has metal wing fittings which solder to Jetex spring. Needs one .008 line.

By WALT MOONEY

This Jetex whizzer does good 60 mph and cannot fly away!

► Here is a simple, easy-to-build, easy-to-fly speed model, rocket-powered in the spirit of this high speed air age, which will get your model club meetings and rainy Saturday afternoons out of the doldrums.

R. T. P. means Round-the-Pole, and when you consider that the model shown does over six laps in two and a half seconds, for a speed of 60-plus mph, you know what R. T. P. means. The British have been doing it for several years, so let's get started.

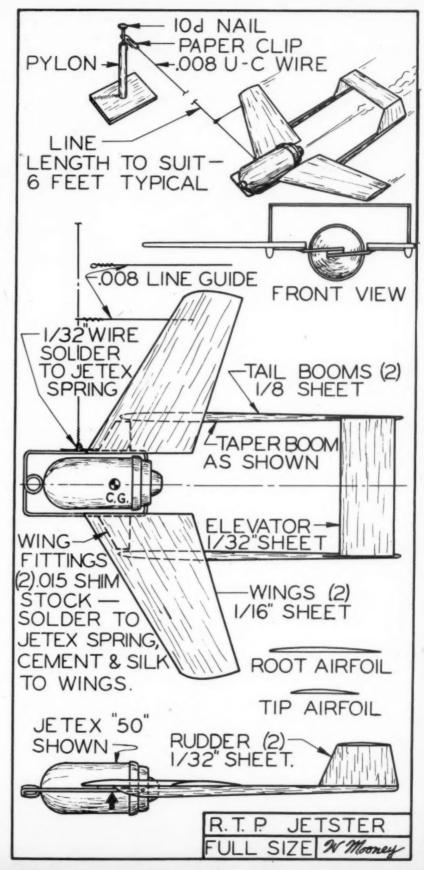
The plans are practically self explanatory. All wood parts are balsa. Use hard balsa for the booms.

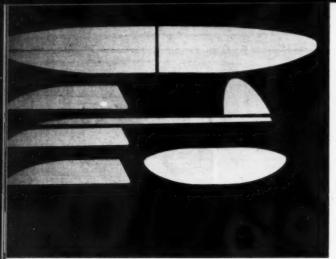
The wing fittings can be shim stock or tin can stock and must be soldered firmly to the Jetex spring. Make sure the fittings have no dihedral and are lined up so both wings have the same incidence.

Shape the wings to outline and airfoil sections and cement them to the fittings. Use a small piece of silk to strengthen the joint. Attach the tail booms and then the rudders and elevator.

Paint the model according to your favorite color scheme. A light color is easier to see and thus timing is easier.

Light the Jetex fuse with a piece of dethermalizer fuse or a cigarette (a match may set the plane on fire—one of mine burned) and let 'er go R. T. P.

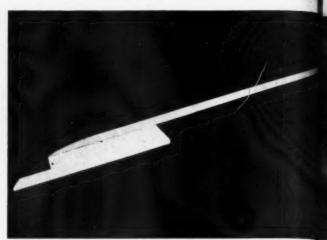




1. Use a single-edged razor blade or balsa cutting knife to prepare these parts from balsa wood. Sand smooth with fine paper.

HI-START...

Combining catapult and towline systems of launching, this big glider soars like a bird. Cord and rubber towline does it.

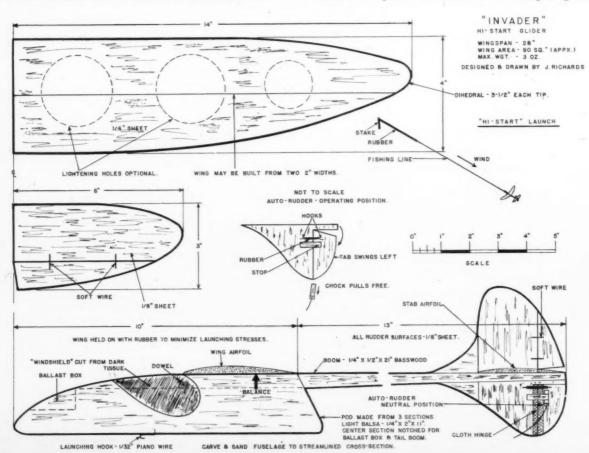


2. Cement together the center fuselage-pod section and tail boom.

The notch in fuselage piece later provides a place for ballast.

By J. RICHARDS

► Those of us who have visited model flying fields have often noticed model builders loaded down with equipment, sweating over balky motors. The modelers having the most enjoyment with the least expense and trouble usually are those flying gliders. Why? No worries about batteries, wires, fuel, pump cans, propellers, etc. For this reason the Invader glider was designed to combine the spectacular climb of the catapult glider





After cementing onto the center piece, both fuselage side sections, use a sandpaper block to smooth and shape the assembly.

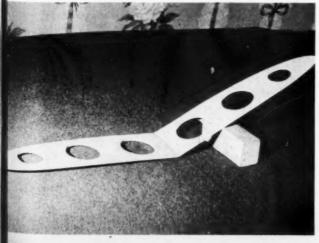
with the soaring glide of the graceful model sailplane. This was achieved through the use of Hi-Start, an ingenious launching method combining the best features of catapult and towline launches. With proper adjustment, the Invader should turn in flights of several minutes' duration. Construction is sturdy and simple and may be completed in a single evening.

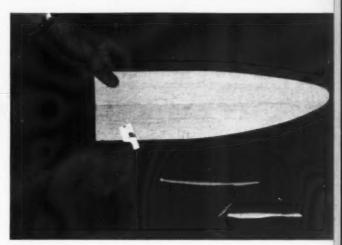
Wing: Cut wing outline from ¼ in. sheet balsa, 4 x 28 in. in dimension. If 4 in. wide balsa is unavailable, two 2 in. wide sheets may be butt-jointed together and cemented to form a 4 in. chord. Trim with single-edge razor, then sandpaper to final airfoil shape. Lightening holes may now be cut and sanded smooth. However, lightening holes in wing and stabilizer are optional and may be omitted for maximum durability, an important factor in sport flying. Wing dihedral joint is now cut and cemented, with tip blocked up for specified amount of dihedral.

Fuselage: Cut three pod sections from ¼ in. sheet balsa. Tail boom is made from ¼ x ½ in. pine or basswood strip 21 in. in length. Taper tail boom and cement to center pod section. Notch pod for ballast box. Cement outer pod sections in place on each side of fuselage. Trim and sand fuselage to streamline cross-section.

Tail: Stabilizer and rudder are cut from 1/8 in. sheet

 Slant middle edges of wing panels to match, cement together and block one up temporarily until dry. This makes dihedral angle.





4. Trim wing to airfoil cross-section with razor blade, smooth the wood with your sandpaper. Two narrow wood sheets can be joined.

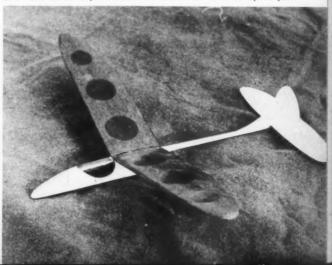
balsa. Trim and sand to airfoil section. Cut lightening holes in stabilizer and sand smooth. Stabilizer dihedral joint is now cut and cemented, with stab tip blocked up for specified dihedral.

Assembly: Cover wing and stabilizer with dark Japanese tissue, lightweight Silkspan. The combination of dark wing and stabilizer with light, natural-finish fuselage and rudder will result in maximum visibility under varying conditions. Fuselage is now notched for wing and stabilizer mounts. Cement wing and stabilizer in position on fuselage, alining wing with 1/16 in. positive incidence under leading edge to insure stability. Rudder and dorsal fin are now added. Rear ¾ in. of rudder should not be cemented in place to permit free use of rudder tab for turn adjustments. Bend launching hook from 1/16 in. music wire and cement to fuselage. Trace windshield pattern from plan, cut from dark tissue, and cement in position.

Finishing: Sand fuselage and rudder with fine 8/0 paper and brush in coat of sanding sealer. If commercial sanding sealer is unavailable, a good mixture may be made from clear dope and talcum powder. Sand entire model with fine paper and brush on coat of clear dope. Repeat procedure for total of three coats of clear dope. Do not sand after final coat.

Flying: Add clay or BB shot (Continued on page 44)

6. For lightness big holes are cut in wing, then the wing covered with model airplane tissue. Holes are not essential—up to you.





Solid Javelin

By PAUL E. DEL GATTO

Be the envy of the neighborhood with a model you made yourself.

▶ One of the largest all-weather fighters in existence is the British Gloster Javelin which has a 52 ft. wingspan and is 57 ft. in length.

An unusual aspect of the delta design is the conventional tail surface arrangement. Despite its size and weight, the Javelin is highly maneuverable and has very good low speed characteristics. Power is supplied by two Armstrong-Siddeley Sapphire engines rated at about 8,400 lb. thrust.

The full size patterns in the accompanying drawing are for a 3/16 in. to the foot scale replica. All authentic scale markings are indicated in the 1/16 in. to the foot scale three-view layout.

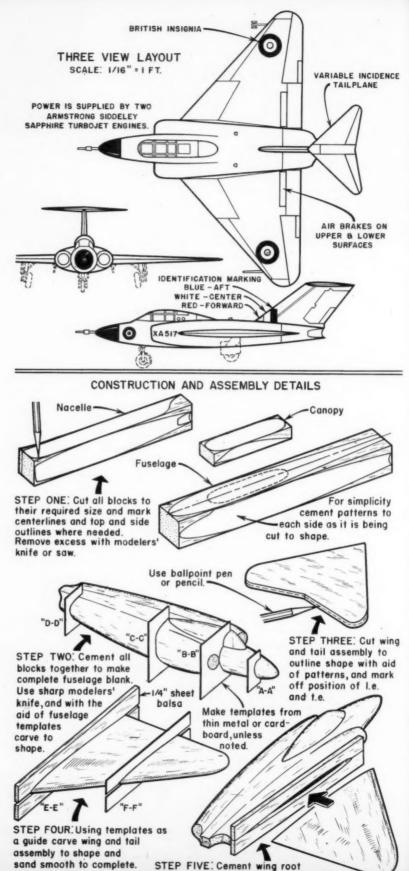
A good finish enhances the appearance of the miniature. When the model has been completely shaped and assembled, fill in all cracks and joints with Plastic Wood and, when dry, sand smooth the entire model. Apply one to two coats of wood filler or sanding sealer to close the wood pores and sand smooth once again. Apply two to three coats of thinned clear dope and rub down with 8 to 10-0 Wetordry sand-

If you prefer combat colors, use sky blue colored dope on the bottom of the model and camouflage green for the top; or use silver to simulate metal covering. Then surface outlines can be indicated with a pencil or ball point pen. For added scale effect drop in to the local hobby shop and pick up some British insignia markings and letters

sand smooth to complete.

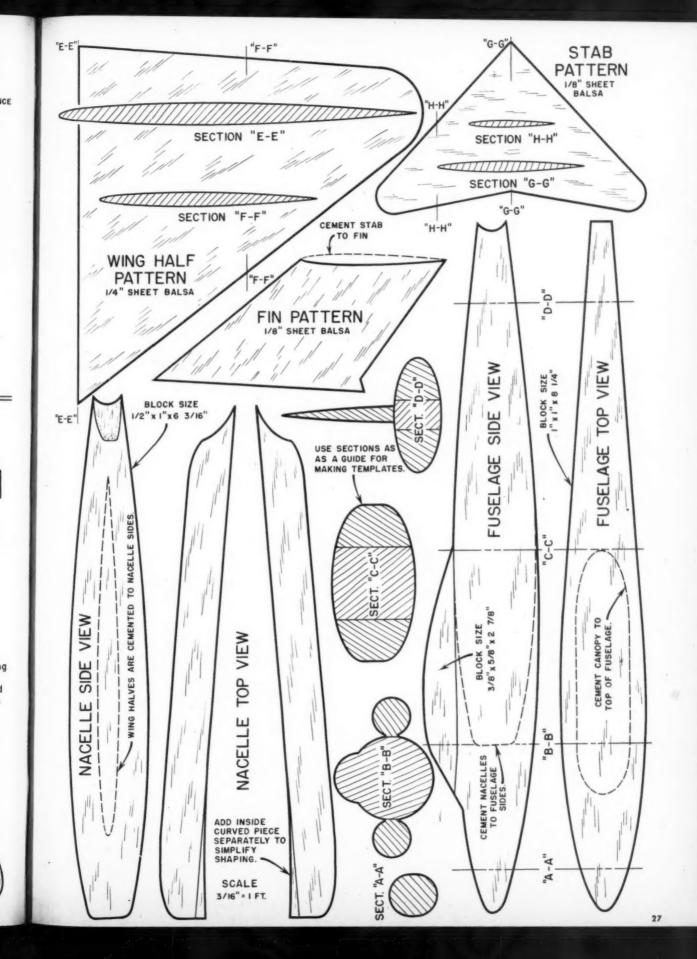
P. D. G.

to add to the model.



template temporarily to fuselage sides, to

be used as jig for accurate wing assembly.





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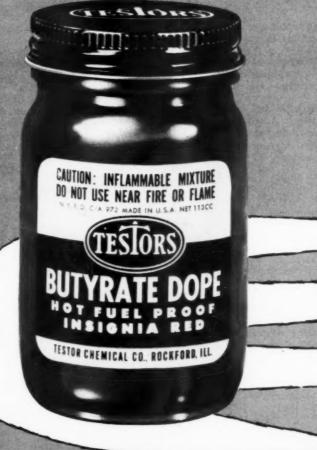
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nor ounce, penny for penny!

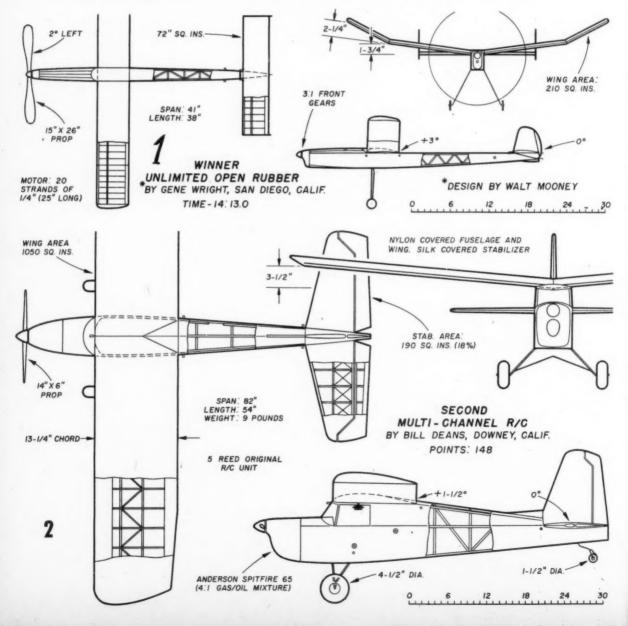
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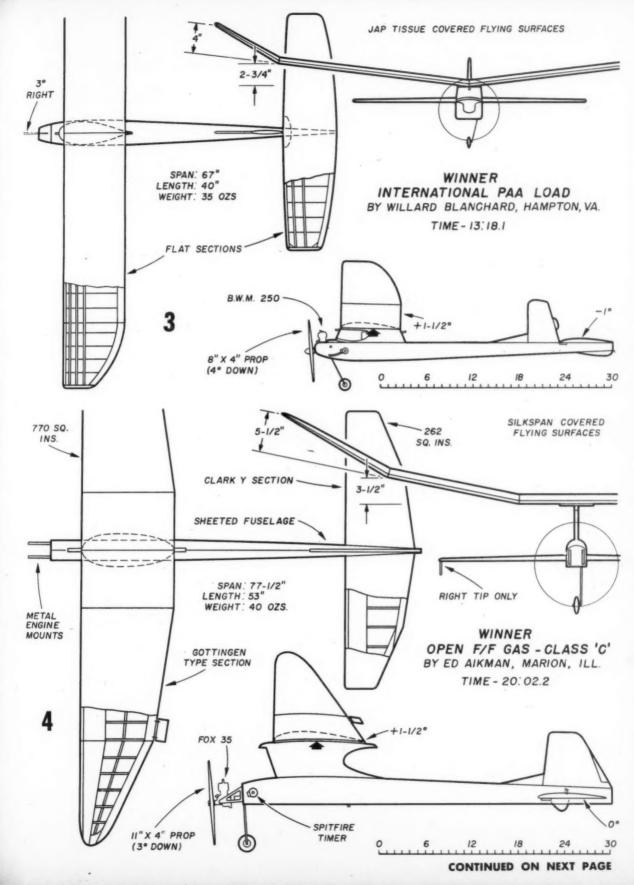
ELEVEN NATIONAL WINNERS...

From multi-control RC to tiny indoor hand-launched gliders, an outstanding assortment.

▶ Bill Dean, a kind of roving reporter of model meets anywhere this side of the Iron Curtain, took in our own California Nationals before going on to the International Wakefield, FAI and Nordic finals in Germany. How he turns out plans during these contests is a mystery, or should we say, a Dean trade secret? (But Bill has been spotted in the wee hours, deep in a pile of model planes, sketch book in hand and empty coffee containers littering the premises.) Asked to whip out a "few" eye-catching three-views during the Nationals,

Dean did better than that. Each of these eleven designs was a winner. Why three hand-launched gliders? Well, to tell the truth, each time Dean sketched the winner on the spot, someone else set a new high time and he had to make another sketch. When the event was over, he found that he'd done the three top winners! Dean did pass up Alec Schneider's multi-control winner in RC because he remembered MAN once published the three-view—so he did Deans' second place winner. That's Bill Deans, not Bill Dean.





MODEL AIRPLANE NEWS . December, 1955

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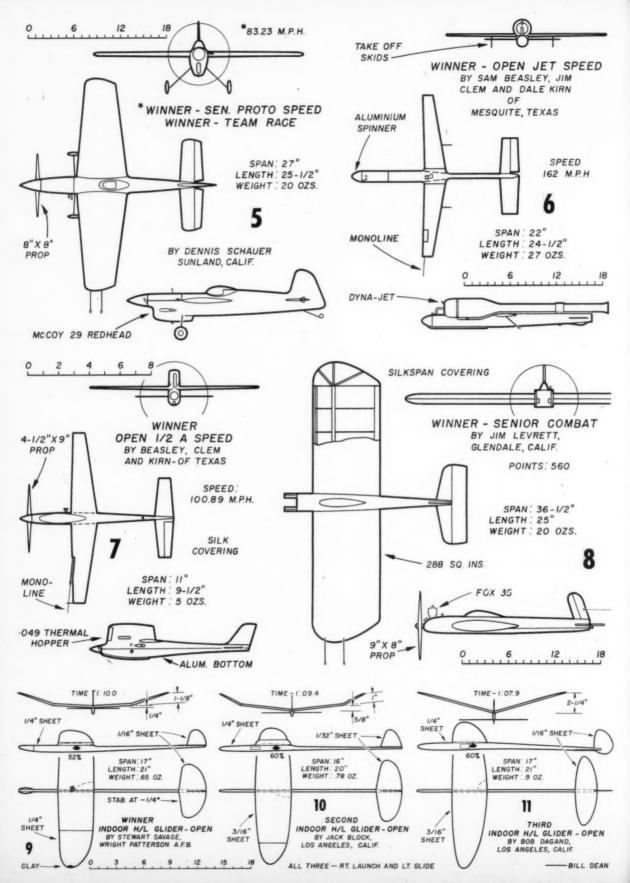
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Figs.





DIE FRIEND *SHOWS THE WAY!*

A PAIR OF DOUBLES!

PACIFIC N.W. REGIONAL M.A. MEET-Babcock radio control captured both single and multi-channel flying events.

SOUTHERN CALIF. R/C BOAT CONTEST at Riverside, Calif., saw Babcock multichannel win both 1st and 2nd awards in the precision event.

In local contests, from coast to coast, Babcock equipped planes and boats are consistently winning top honors.

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HATS OFF TO EDDIE FRIEND and his brilliant precision flying that won him top honor award in the National Championships single channel radio control event.

"IT'S EASY WITH BABCOCK!" said Eddie. "I built my first R/C model less than a year ago and I have had nothing but successful flights since installing the Babcock equipment. Its simplicity and extra reliability gave me the confidence and ability to win at the Nationals"

BEAR IN MIND, this was Eddie's 1st major contest and his 1st radio controlled model plane built a few months before the event. Actually, Eddie was still a novice, an unknown youth pitting his skill against experienced contest flyers.

THE ANSWER, of course, was Babcock equipment. There was his confidence! His only concern was the flight pattern. He knew his radio and its reliability. That made the difference!

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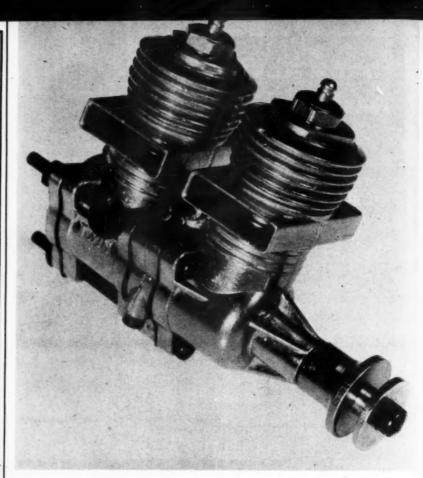


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Engine Review

By E. C. MARTIN

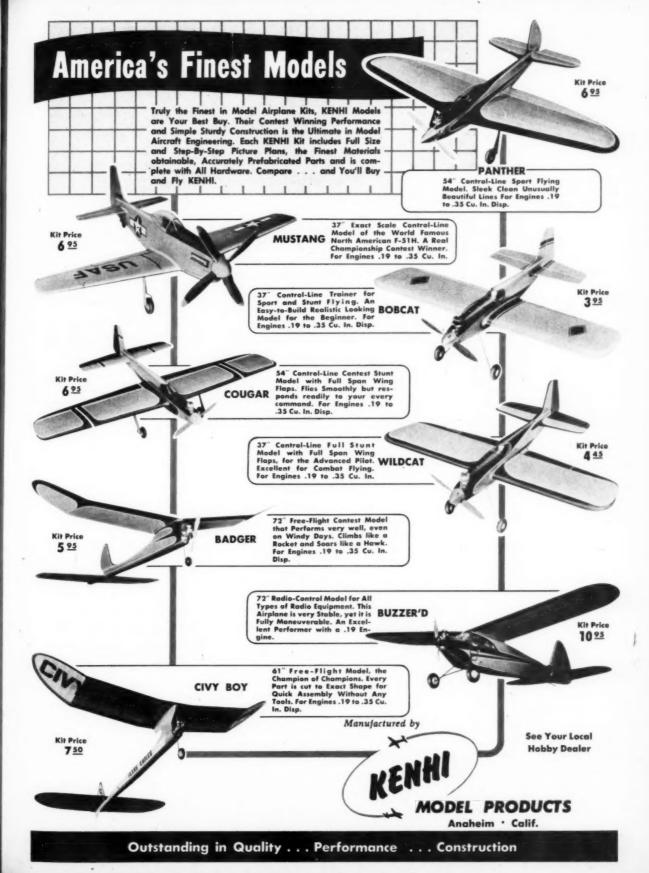
New, smooth running K & B Allyn .15 Twin will appeal to radio control and flying scale enthusiasts.

The features which particularly stood out in the design of the original Allyn Sky Fury .049 were rigidity, freedom from cylinder distortion, ample working surface areas and the production of high torque with smooth running over a wide speed range. We have since tested this basic design in several forms, each well conceived, beautifully made and very satisfactory in operation. The design can be said to have passed the test of time and established a sound reputation in its class, and it is fitting that it should now herald in what may well be the beginning of a new phase in model engine development, the low cost, small displacement, multi-cylinder engine.

Experts have for many years maintained that the maximum bhp per cu. in. will always, in small engines, be derived from a singlecylinder engine because the friction hp per cu. in. will be least. In other words the multiplication of cylinders is a corresponding multiplication of friction. However, the maximum attainable bhp per cu. in. depends on rpm to all intents and purposes, and this in turn depends on allowable piston speeds, volumetric efficiency and inertia loadings which increase as the square of the rpm. Meaning, of course, that big ports which increase volu-metric efficiency only pay off up to the point where the engine is using all its power to

overcome its own internal inertia losses. This point can only be reached if the permissible piston-bore rubbing speeds are high enough, and in order to reduce piston speed and increase rpm we have the modern trend to very short stroke design. Once this limit is reached with a single-cylinder engine the designer has perforce to go to several small cylinders with their lower piston speed so that he can take his rpm higher and thus get some more bhp per cu. in. An example is the 270 cu. in. Ferrari racing engine which had 12 cylinders and the 92 cu. in. BRM which had 16 and produced about 500 bhp and 16,000 rpm. However, the race course is the creator and destroyer of ideas and both of these multi-cylinder giants of not so long ago have been surpassed by the four-cylinder high torque Ferrari on the shorter courses. Another example is the famous four-cylinder Offy engine of Indianapolis fame which consistently humbles the eights.

We hear that the newest Ferrari is of all things a twin, which brings us back to the subject of our test. Do any of these factors apply to the Sky Fury? No. The first opinion is apparently correct because the new twin will neither turn large props nor small props as fast as the K & B .15. It is not therefore likely to be widely used (Continued on page 51)



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Modelers get a real thrill out of creating fast, flashy power boats from Dumas kits! As a Christmas gift for the hobbyist, or for pleasurable winter hours for yourself, Dumas models mean more enjoy-

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DUMAS MODELS DELIVER MORE ... IN EVERY WAY

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Radio Control News

(Continued from page 18)

employ secondary relays. Switch action would be accompanied by means of sensitive sub-miniature micro switches. We'll keep you posted on this idea; at least, it is something to think about.

Sometime ago we mentioned a pneu-matic actuator system which is being toyed with in England and on the Continent. Developed by a German named Stegmaier, air pressure is used for actuating the control. Asked how it works after the engine quit, Geoff advised that it then works on a vacuum system which is sufficient for about 15 rudder operations before going dead. Needless to say, this idea is too complicated to describe on tape so you'll have to wait until the next mail arrives with sketches. In Geoff's experience with two-speed engine control, using ignition engines, interesting phenom-enon occurred. In switching from high to enon occurred. In switching from high to low speed, it is possible for the break to be made before the spark has properly ignited its next firing cycle. When this occurs, especially with good hot batteries, it is possible for the engine to backfire, thus throwing off the prop occasionally.

The solution? To use an escapement (four-The solution? To use an escapement (four-arm) so arranged that, as the escapement arm begins to rotate, it will short out the high voltage supply to the plug. This is only momentary, but provides a break long enough for the high-low contacts to be switched. This method enables Geoff, and other fliers, to get in 12 flights from

8 to 10 p.m. and still do over 50 touch-

and go landings without a miss. Imagine flying at 10 p.m.!

What's the latest on the FCC registration filing? It was previously announced that of an estimated 40,000 to 50,000 users of examination-free transmitters in this country, there were but 6,000 registrations filed with the FCC. Possibly as a result of the campaign put on by MAN and other magazines and groups, this figure is up to 13,000. But it still isn't enough to convince the FCC that another frequency is needed. Get in your FCC registration today. Why do we continue to mention this? For the simple reason that the FCC has allotted the 27 mc that the FCC has allotted the 27 mc frequency to be used for other remote control applications. These applications will involve the use of high powered transmitters, with the signal radiating from tall towers. (Such operations are now licensed in 20 states with output as high as 500 watts.—Editor) What could happen? You could have that new ship spin-in on you for no other reason than that you didn't send in your FCC registration so that another frequency could have been allotted. As we've mentioned before, Walt Good and the AMA are working to get another spot frequency. And here is how you can help. Send in your FCC now you can help. Send in your FCC registration and, in addition, write to your Senator and Congressman, telling them of the need for a new frequency and soliciting their help. Something in the 40 mc range is possible if you cooperate. Walt Good also says that very that the service of the senator of the s

very few letters were received concerning your desires in the way of new RC rules etc. Can't say we haven't warned you, fellas.

TECHNICAL TOPICS

Where is that FCC registration you were going to send in? In fact, when you buy a transmitter from your dealer and you don't already have a registration card, be sure he supplies you with the proper

Did you ever trim your elevator for a

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R/C AIR WHEELS: Large air volume, Pure, bouncy rubber. Factory inflated. Maple hubs. Brass Bushings. Price per pair. Singles half.

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R/C WING/STAB KITS. Many in use as Wing/ Stab replacements. And on original fuselages. Clark Y die-cut ribs. Formed and notched edges. 42" Sp. x 7" Cd...\$1.75 60" Sp. x 10" Cd...\$3.50 50" Sp. x 9" Cd...\$2.50 (Stab Area to suit Wing)

T-56 RUBBER. For Wakefields and Limited. 1/4 Width, 3¢ per ft. (Minimum order 25 ft.) SAFE WINDING HOOK, Place in chuck......\$.50 5-1 R/C WINDER. Long winding extension..\$1.00 "BABY" ELMIC TIMERS, 1/5 oz. wt\$1.00 1951-52 and 1953 YEAR BOOKS\$1.00 each

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PLUS an amazingly simple, rugged, and realistic fuselage. YOU MUST FLY IT to see the astound-

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SEEN ... AND I'VE SEEN THEM ALL!" says Matt Kania, world-famous model designer.

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shallow dive, only to have it wander off to the left or to the right? Not a spiral or a spin, just an annoying tendency to go left or right instead of straight. Carl Schmaedig solved this problem on the plane we saw at Selinsgrove this year. Fig. 1 shows the basic idea. The small rudder and fin are located about 3 or 4 in. from the main rudder, on the trailing edge of the stabilizer. The .040 in. piano wire guides are bent to apply the proper amount of auxiliary rudder action when the elevator is placed in a down position. Left or right auxiliary rudder action will depend upon which side the wire guides are placed. A simple but most effective gadget.

In talking about reed outfits with "the men who own one," the consensus was the same. Follow the manufacturer's instructions for tuning and be sure to check your transmitter voltages occasionally. Even though the reeds themselves are very selective, often having a bandspread of about three cycles, temperature and external vibration have very, very little effect on them. However, the transmitter must be capable of sending out an audio tone which is within the range of the reeds. This means a stable audio oscillator, and the only way to obtain this condition, without going into complicated circuits, is to maintain proper battery voltages. Measure the batteries under load and replace them as the manufacturers instruct. The fliers who have done this have reported no trouble, such as missed impulses and erratic operation. It's better spend a little on batteries once in a while than it is to rebuild your plane and perhaps buy a new receiver.

Fig. 2 shows how the boys from Bramco mount their reed receivers in those big biplanes. This holds true for practically any type of receiver, provided you can

place it in a small box. Use regular 1/2 in. foam rubber and use Pliobond or 10-Min-ute Glue, obtainable in most 5 & 10c stores, for adhering the rubber to the case

and to the support in the plane.

While we're on the subject of shock mountings, it should be pointed out that in any shock mounting set-up it is undesirable to have the resilient members so flimsy as to allow an oscillating motion to be set up. The plastic foam, which we have mentioned in the past, is being favored for certain receiver mountings. This material, obtainable in most 5 & 10c stores as decorative material, allows the shock to be taken up in one direction, but will not throw the unit back, only to be thrown in the opposite direction.

One possible solution to obtaining a stable voltage source for audio oscillators would be to use a voltage regulator tube in conjunction with a vibrator supply. A in conjunction with a vibrator supply. A voltage regulator tube may also be used across a battery supply. In either case, remember that a regulator tube will cut into the current capacity of your power source. However, it will help maintain a pre-determined voltage and therefore make town suffic excillator, were stable. your audio oscillator more stable.

NEW ITEMS

The Kinder Co., Box 686, South Milwaukee, Wis., has a new electric motor (see photo) which should really set you to thinking. Measuring 1% x 1% x 1% in. and weighing but 3 oz., this motor will maintain the state of the st tain speed regulation within one per cent from idling to full load, at a speed of 1,800 rpm. This regulation is also effective over a battery voltage range of from 6.4 to 4.6 volts. Don't turn up your nose at the 6v operation, since normal loads require but a 40 ma current drain. Lifetime lubricated bearings. plus the other novel (Continued on page 40)



BRAND NEW!

* U. S. S. *

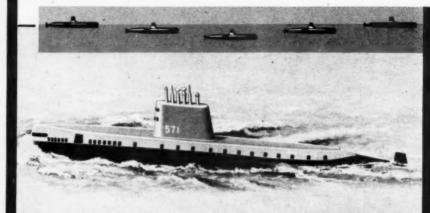
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A real-as-life operating model of the world's first atomic sub. It cruises on the surface . . . submerges to periscope depth . then automatically re-surfaces! ALL UNDER ITS OWN POWER! Exciting to watch . . . even more thrilling to operate. Not a toy-but a real operating scale model fully half-a-yard long! Assemble the few ready-formed parts real quick . . . ent kind of modeling thrill. and you're set for a truly new and differ-

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OPERATES LIKE A REAL SUB! Submerges! Surfaces! Cruises!



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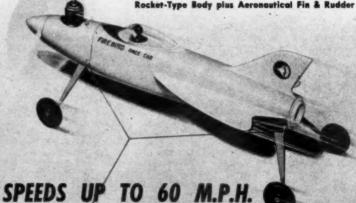
Hang on to your hats! You're looking at a real "speed demon" . . . all-new and rarin' to go! You just won't believe a race car priced so low could deliver so much action! It's amazingly fast . . . actually speeds up to 60 M.P.H. on any smooth surface. See the new "FIREBIRD" smooth surface. See the new "FIREBIRD" at your dealers . . right away! You'll love the way this exciting speedster whips along the ground . . and the easy way it handles! The all complete kit features a completely carved "bullet-type" balsa body and 4 realistic rubber wheels. All other parts are finished, so it practically falls together!

POWERED WITH ANY Small Bore Gas Engine .035 TO .074

Entirely New! ENTIRELY DIFFERENT!

NEW FUTURISTIC DESIGN!

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Wow! Talk about speed . . . here's the fastest, sleekest, most beautiful speedster ever to hit the water! Sheer dynamite for boating thrills and high-powered performance! New advanced hydro-skis seem to lift out of the water as they

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Then watch the crowds gather as you put your "DART" into action! And it costs so



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MORE EXCITING ACTION MODELS FROM SCIENTIFIC . . . SEE YOUR DEALER!



CESSNA "BIRD DOG"

SPAN: 18" For .035 to .074 Eng.
Scale model of USAF abserv. plane. Big value
kit . . . prefabbed with carved fuselage, etc.



\$1.50 SPIRIT OF ST. LOUIS



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Practically puts itself together. Prefabbed.



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Class "A profile trainer. Extra rupged. Assembled."

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Sleek new speedboot for OUTBOARD engines.

Has a 12" corved balsa hull, brass metal

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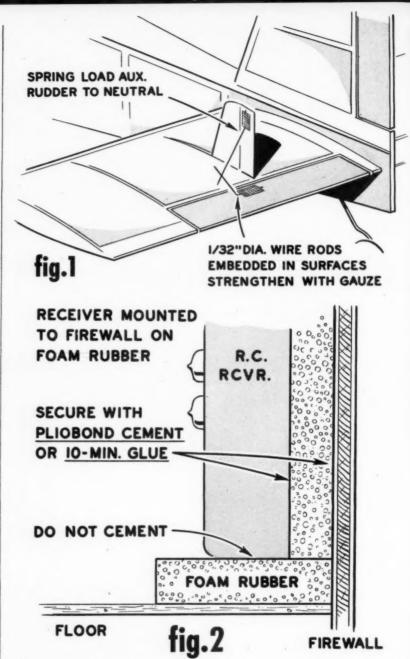
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teatures, should put this motor into quite a few new designs you may have been thinking about. The price is unannounced, but information may be obtained by writ-

ing to the Kinder people.

Lafayette Radio, 100 Sixth Ave., New York City, has been mentioned before as a source for small transformers, and subminiature, components. New items are being added from time to time and flier sheets are obtainable. Their latest folder gives quite a list of battery boxes which are suitable for RC work, including holders for some of the Mallory Mercury cells. Books on transistor circuitry and schematics are also listed in this folder. When inquiring about this folder, refer to Dept. ST-24; we think you'll find some-

thing of interest in it.

Polk's Model Craft Hobbies, 314 Fifth
Ave., New York City, has a limited supply of four-prong plugs and sockets for \$1 per set. The unusual thing about this is that these plugs and sockets are generally not obtainable except to manufacturers. They feature precision moldings and gold plated pins and clips for minimum contact resistance.

We've recently completed checks on the new Advance Electric Co. (2435 N. Naomi St., Burbank, Calif.) SO 10,000 ohm relay, which was written up several months ago. As received, the relay pulled in on 5 volts and under 60 cps vibration in on 5 volts and under 60 cps vibration gave reliable operation with a pull-in current of .7 ma. Using a .1 mfd capacitor in series with a 47 ohm resistor placed across the points of the relay, we were able to draw reliably 4 amps at 6vdc. This is more than enough for any normal processing and the resistance of the property held up for RC work and the points held up for 2,500 operations, at which time the test was concluded. All in all it looks like a pretty nice relay.

If you or your club is interested in doing experimental work requiring "bread-

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replicas of world-famous FIGHTING KS. featuring revolving gun turrets, ble wheels and half-tracks. Official scale is previously used in pre-combat training, nition, etc. Super-detailed down to rivet gas tanks, bogies, teels, tracks, suspensions, es, etc. Metal-cast, nothing to build ar



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NEW!



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A one piece unit that can be screwed or glued to the bottom of any boat—connect the shaft supplied with boat—put in 2 intermediate cells and run. Complete with flexible coupling, life ring, running light, motor switch and spring loaded battery box.

ARISTO CRAFT MOTORS

Powerful double permag—high efficiency, low drain, light weight, redi-mount, 1.5 to 6 V battery operation.

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Special heavy duty for R/C boats, cars, etc. Carbon brushes, high

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ARISTO-REV MOTOR



described by \$9.95 McEntee & Lorenz. Length O.V.A. Length O.V.A.
2¼". Double ball bearing.
Max. diam. 1". Wt. 2½ ozs.
Carbon brushes, 4800 RPM
on 3 volts or double RPM and
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tested and adjusted. Cartoned and sealed for your protection. The heart of your receiver cannot be surplus—Accept No Substitutes! \$6.00 Series 4F (8000 Series 4F (8000 ohms)
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CRYSTALS. Guaranteed and tested ±.04% 27,255 mc. \$3.95

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board" layouts, the U. M. & F. Manufacturing Corp., 10929 Vanowen St., North facturing Corp., 10929 Vanowen St., North Hollywood, Calif. has what is known as the SeeZak kit. Containing an amazing array and assortment of hardware, panels and formed chassis parts, a Starter Kit is available as low as \$15.90. Just the thing for experimental or pre-production mock-up work. Available also through Arrow Electronics, Inc., 65 Cortland St., New York City.

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Also, for the serious experimenter and for those who want to look into transistors, Sylvania Electric Products, Inc., 1740 Broadway, New York City, is offering a Transistor Kit, consisting of a booklet entitled 28 Uses for Junction Transistors, two Sylvania 2N35 transistors and one 1N34 diode. Even though BC work one 1N34 diode. Even though RC work has not incorporated the use of transistors to any great extent, here is a chance to find out what is involved in their use.

Polk's Model Craft Hobbies is now offering their own 27.255 mc crystal. Packaged in a small plastic box, this \$3.95 unit is second to none as far as activity is concerned and its ability to be used in a variety of circuits. While on the subject of crystals, Ace Radio Control of Higginsville, Mo. is now able to furnish the needed crystal for our Canadian and British modelers, which will put out on 27.120 mc.

Citizen-Ship Radio Corp., P. O. Box 5971, Indianapolis, Ind. now has a companion transmitter for their Printed Wiring receiver. This transmitter (see photo) uses printed circuit technique (etched wiring) and comes in kit form for \$19.95, or fac-tory-built and tested for \$24.95. Cost includes tube and crystal and the set features a built-in tuning indicator, with but one adjustment for setting on frequency. So compact it may be handled like a flashlight, the model is known as FL-27 for the kit and FLX for the ready-built unit.

Make Your Own Decals

(Continued from page 15)

find that with every color change we must make about 20 prints on newspaper before the ink seems to flow correctly without bleeding. The use of a very sharp squeegee will also do much to make sharp, perfect impressions. A dull squeegee pushes too much ink through the silk

mesh and causes bleeding.

Be sure each color is thoroughly dry before applying the next one. In working with decals it is not absolutely necessary to print the lightest colors first and then rogressively darker since many times it is desirable to have lighter colors overlapping darker ones, as in our Civy Bo 61 design, illustrated. (Incidentally, this is not a professional decal, of course, but was chosen as an excellent example of the type of fine detail work possible with the silk screen process of decal making.) With decal ink this is possible, while it usually proves unsatisfactory on fabric material.

The top coat of lacquer may be applied very carefully with a brush although we prefer the use of a small screen with an area large enough to cover the design taped out. The clear coat may thus be squeegeed through, giving a more uniform coat than a brushing covertice. coat than a brushing operation form would.

Airplane names, club emblems, scale model markings, AMA numbers—the types decals a modeler uses are almost countless. Now you are no longer limited to your hobby dealer's selection. If he doesn't have them, make them yourself!

If any difficulties arise in doing silk screen work, tell your problem to the au-thors in care of MODEL AIRPLANE NEWS and we'll help in any way possible.

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Ordinary dope... average cost 154 per oz. Fuel Proofer.... average cost 154 per oz. TOTAL 304

AERO GLOSS FUEL PROOF DOPE 204 1 OZ



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THE SUPER TIGRES

SUPER TIGRE
G-20 .15 cu. in.
NEW F.A.I. SPEED
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Super Tigre — Sig Garofali's Italian Ball Brg. becuties — We figure the "G" is for "Gina L.". Italy's Prati Amato set International F.A.I. speed record 190.470 km/h., with the G-20 lap piston model. Beautiful precision — complete with wrench, plug & venturi inserts,

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OS MAX 35

WORLD'S HOTTEST STUNT-COMBAT ENGINE

> \$11.95 (Less Plug)

The Max-135 has been winning friends all over the country — so fast in fact that some of you have had a little wait a bit. Sorry. Anyway we will have a lot of these in the fall of '55 and we hope we can keep up with the demand.

Ordering — Send \$1.00 with C.O.D. orders. We send cash orders by AIRMAIL FREE. Also FREE TRIAL INSPECTION, if you are not satisfied you get complete refund—no questions cashed. Move man!

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WORLD ENGINES

SEVEN-ELEVEN

(Continued from page 13)

each cover. Lightly wet the outside of the cover (this will make it easier to form); cut and fit in place. After side covers have been cemented in place, trim and sand to a nice streamlined shape. You now have one of the strongest pylon and wing platforms—second to none. This is very necessary when flying in the wind. It will not allow the wing to rock or be shifted around, and its pop-off qualities are not hampered by wing pegs. Wing pegs or keys often sprain wing pylons and although the wing is seemingly replaced in the right position, results of the next flight are often disastrous. Another thing with this type of pylon is that it presents one of the smallest amounts of side area. Thus, prop wash pressures are held to a minimum, making power set-up less hair-raising.

Now make up the tank as shown. Cut and form tubing as shown in top and side view. Installation is fairly simple. The tubing holds the tank in position. Make sure, when placing the hole in the top right plank for the filler tube, that it is close enough to allow the tube to the engine to protrude sufficiently. This will hold tank in the vertical position. Now plank bottom of fuselage, following the same procedure as for the top. Install firewall with the nut-retaining plate in position. It is advisable to give several coats of cement to firewall and former F-1. This will insure a good fuelproof bond. Now put on stabilizer platform. See front view for necessary stabilizer tilt. Start with 3° built-in. Any alterations can be made afterward with shims.

Wing and stabilizer construction are similar. Start by tracing and cutting out all the wing and stabilizer ribs. Assembly is started by stripping two pieces of ½ x 1½ x 36 in. balsa for the lower trailing edge. Then taper edge to suit ribs, forming an even angle to take the 1/16 x 1½ in. sheet balsa top trailing edge. This edge is put on last, after the dihedral has been put in. Use a good cement bond at each joint. Place leading edge and taper to suit the 1/32 in. sheet covering the assemble. After this is dry, sand the leading edge round.

The silk covering is put on with a mixture of half cement and half dope, starting with the bottom at the center section around the dihedral joint and finishing at the tip. The top, however, is done one panel at a time. Use a good fuelproof dope. Three coats are necessary on both wing and tail surfaces as well as on the fuselage.

After the covering has been completed, construction can begin on the wing pod. Strap wing on pylon and cement on formers WP-1. WP-2 and WP-3. To wing, trim WP-1 to suit planking. Planking is applied by the cut and try method. When completed, give three coats of dope. The model should weigh 20 oz. and should balance on the rear spar of the wing as

balance on the rear spar of the wing as indicated by B.P. on plans.

Flying this model is rather easy. Start by test-gliding model. If model has a rather fast, sharp, downward glide, add incidence to the front of wing until model has a slow flat glide. If the model has a tendency to stall, reverse procedure and add incidence at the rear of the wing. Before flying, make these adjustments permanent by filling in all around pylon to nest wing securely. You are now ready for power flights. Put on a 9 in. diameter, 4 pitch prop, backward. This will reduce power on the climb. Use about a seven-second motor rup. Oh, yes—please don't forget the dethermalizer, I've seen too

many ships lost during tests. If the ship has a tendency to pull too much to the right or left, add thrust in the opposite direction. Your glide turn should be to the left and a slow natural right turn in the climb. Increase your power and testfly again. If the ship reacts the same, put the prop on frontward. Test-fly again, and if the results are the same, start opening her up. Also, shorten timer run to five seconds. Now, under full power, if the ship pulls over on her back, add down, thrust until ship is climbing in a wide right turn. Once the ship is set up with a certain size and pitch prop, do not change prop unless you take the same precautions as in test flying. This is a common mistake made at meets.

Contest Calendar

NOVEMBER

6 Dallas, Tex.: Class AA Cliff Model Club Meet for FFG. Joel B. Hargis, CD, 1102 W. Saner Ave., Dallas, Tex.

13 Inglewood, Calif.: Class AA Skywolves' Team Race. Don C. Crystal, CD, 805 E. Palmer Ave., Compton, Calif.

DECEMBER

4 Phoenix, Ariz.: Class A Model Aircraft Rodeo. Entry restricted to PMAC and invites. Quentin Webster, CD, 521 E. Camelback Rd., Phoenix, Ariz.

4 El Paso, Tex.: Record Trials for FFG, OR, TLG, OHLG, Fred Lind, CD, 1610 E. Yardell, El Paso, Tex.

CD, 1610 E. Yardell, El Paso, 1ex. 30-31, January 1 & 2, 1956—Miami, Fla.: Class AAA 2nd King Orange Internationals. Charles R. Quick, CD, 1896 N. W. 36th St., Miami, Fla.



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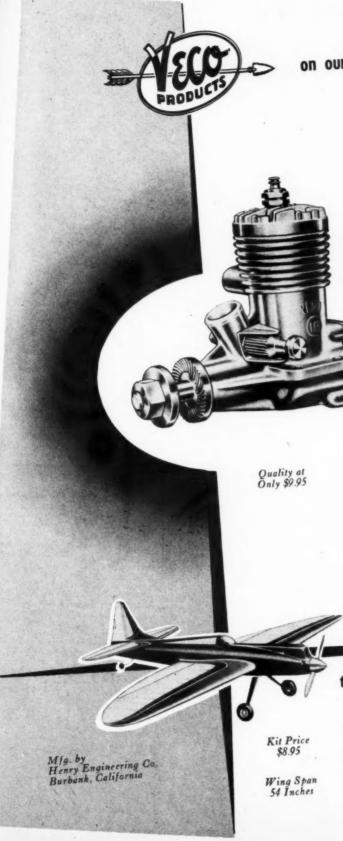
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- · So small it handles like a Flash Light.
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 Complete with 27.255mc Crystal and powerful 3A4 tube.

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Complete with relay and 3V4 tube CITIZEN-SHIP

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Citizen-Ship RADIO CORP. Indianapolis 20, Ind.



No Other Engine Gives You All These Advantages

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*International Payload Event 1955 National Model Airplane Contest

Hi-Start . . .

(Continued from page 25)

to ballast box until model balances at 50 per cent of wing chord. Select calm day for test flying. Hand-glide model to check alinement. If model dives, warp up rear edge of stabilizer. If model stalls, warp down rear edge of stabilizer. For first powrear eage of stabilizer. For first power launch, set stake in ground, attach about 15 ft. of ¼ in. rubber, combined with about 50 ft. of kite string, with wire loop on end of string. Attach model by hook, pull back, and launch into wind. Climb should be at a gradual angle, releasing smoothly at top of launch. If model goes off to either side under power, correct with rudder adjustments. Rubber tension is increased on successive flights to obtain greater alti-tude. Gradually tighten natural turning circle by adding clay to inner wing tip, removing small amounts of nose weight if necessary. Proper combination of rudder adjustment and wing-tip weight will result in straight launch and tight gliding circle for "thermal hunting." For even greater altitude, increase length of rubber and string. With sufficient power, a really spectacular climb may be obtained.

MAN at Work

(Continued from page 6)

"allow" the girls to officiate (oh, those clever "boys") at a recent Jalopy Race, Merrilyn Adajian masterfully briefed the other wives (this is CCAMA News). A few highlights: "A Jalopy Race is similar to a team race except that an airplane built to a team race except that an airplane do it. for a team race is a kit made from a do-ityourself. A plane for a Jalopy Race requires more talent as it is made from an original design. It usually is designed, built and flown all in the same day. Any lumber found around the house can be used. Any carpenter can quickly cut out the parts from a flat board. Nails are not necessary as wing and tail can be held on with pieces of inner tubes. These planes are referred to as precision instruments when in the hands of a boy over 16; the word toy is permissible at all ages under 16.

"The winner is the man who can turn around in a circle the required number of

times swinging the airplane on the end of a string the fastest. If you think this is easy, get together with three other girls, stand back to back in the center of the kitchen and each swing dust mops at arm's length for 170 turns." And a couple of the definitions:

"Stooge: This is the man who holds the airplane as other ships take off over his head. ROG: Relaxation of Gentlemen. Starter: These engines are not started with the foot as with some cars, but are cranked from the front as the old time cars. The planes, however, are often ended with a heavy step of the foot." There's a lot more but Merrilyn opines that "with this simple knowledge wives will be able to amaze their husbands at the very next Jalopy or team race." Yes ma'am!

Ray Matthews, the old payload king, wonders why model editors beat out their wonders why model editors beat out their brains trying to make something out of "snow bird flying," when the Second King Orange International Meet in Miami on December 30-31 and January 1-2 is such a mid-winter natural. "We specialize in all events, notably FAI events. We specialize in a contest for contestants, while in Winter Wonderland for almost free accommodations." See what happens to you when you move to Florida? Ray forgot the bathing beauties on water skis! Exchange Clubs will sponsor this year. The Marines have furnished one of the greatest free flight spots that Ray's "fuelproofed

eyeballs" have seen. Housing is so cheap that Ray can't afford to live home. And "real" food. Housing for six days, one buck. Food, \$1.60 a day. Helicopters to spot free flights. (Address Ray at P.O. Box 234, International Airport, Miami 48, Fla.) Rally round the flag, boys, it's off to Florida! So long, boss, we've just resigned!

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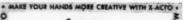
Hold Your Breath Department: Detectives found Jimmy McCroskey's Mustang, so you can't win the next Nats either . McCoy .29 Red Head went slug. What's that? Ringless piston, of course. Smart modelers figured that the .29 and .36 super stunt engines did so well that they'd try lapped pistons in the .29 Red Head. More appea pistons in the 29 Red Head. More power, easy starting, longer fuel draw. Took three places in team at the Nats, set a proto record and a first in Carrier ... Model Aeronautics Made Painless, recently advertised, is an amazing book. The writer, R. J. Hoffman, is an amazing man. Took an aerodynamicist's view of models since an aerodynamicist's view or models since before 1920. Matter of fact, designed at least one old Army Air Corps bomber, al-though we recall reading somewhere a dopey mechanic rigged the control cables backward. Also redesigned successfully an overweight, loggy racer that then went on overweight, loggy racer that then went on to win the Thompson, setting a new record (Hoffman never lets on). It's a little book with big contents—the myriad sketches sneak up on you. Raoul says he hastened to get it all down now because he was afraid he'd run out of years . . . Bill Paxton, afraid he'd run out of years . . . Bill Paxton, the ducted fan MIG man, says the new spring starters (ask your dealer, not weuns) work beautifully on ducted fans and eliminate the old bottle cap starting method. The new Cox makes the MIG climb at 45°; take-offs from landing gear practical . . . Lakewood Flite-Masters (Donald R. Cowgill, 15118 Detroit Ave., Lakewood Ohio) the new up-and-coming Lakewood, Ohio), the new up-and-coming Cleveland area outfit we plugged last July issue, really arrived with the highly successful First Annual Bonne Belle Free Flight Meet. Have 56 members now Flite-Masters did all right at the Junior Air Races, the huge Cleveland contest that has been held annually for two decades, sponsored by the Cleveland Press. Steve Babin ran up 435 points in Carrier with his original Grumman Bearcat, powered by a Fox. 59 with exhaust baffle throttle. This gave him a wide spread between 37 mph low speed and 87 mph tops. After getting in his flights, Babin and a couple of other team members dashed madly for 15 miles to the Cleveland Stadium to put on demonstration combat between games of an Indians-White Sox double header.

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latest news, pictures, happenings in home-built aviation can be had for 25c by addressing Experimental Aircraft Assn., 3801 S. 56th St., Milwaukee, Wis. . . . Long Island Gas Monkeys want to tell the world how good they are. Took 36 total places this year, a first in all but two contests. this year, a first in all but two contests. Hot for free flight, despite no place to fly. Never-say-die New Yorkers (or environs) contact Pete Ferrara, 77-32 79th Place, Glendale 27, N. Y. . . . Howard L. Cooper who was Hobby Department Manager, Bentley's and the White Co., in Columbus, Co. Lead to read line grain with the Ga., back to modeling again, with the Hobby Center, Miami, Fla. . . . Tony Alvarado, Havana, says you Miami modelers interested in Cuban contests should drop a line to Sr. J. C. Mas, Asesoria de Aero-modelismo, Comision Nacional Deportes, Palacio de los Desportes, Vedado, Havana . . . Don Fozzard, Box 566, Decatur, Ill., wants to get another club going, says flying site, complete with three concrete pylon circles and a private parking lot, is not being used. How could this be? Let's go, Decatur! . . William Grove, author of the Pac idea for RC (MAN, 10/55), says caption should have read Veco Comanche, not Kenhi. Solly . . . Bob Hatschek to sav he got an overrun on that engine shut-off he wrote up in the October, 1955 issue. And in public. Suggests letting the plunger go entirely by the fuel inlet hole in the Tee, which allows air to bleed back into the fuel line at same time as plunger shuts off the needle valve body. This gives double action which will function regardless of how poorly the plunger piston is lapped. Woe is us!

The Grumman F3F-3

(Continued from page 21)

root sheet in place, squaring up to the fuselage center line and zero degrees of incidence. Carve the root to a Clark "Y" airfoil and blend the balance of the root airfoil and blend the balance of the root into a fairing. Where necessary, use wood filler better to build up the fairing. Sand the fuselage smooth and apply several coats of clear dope to both fuselage and tail assembly. Where needed, patch nicks with wood filler. Once the fuselage and tail have worked their way down to a smooth shell, apply several coats of balsa sanding sealer across the grain and again sanding sealer across the grain and again reduce to a smooth finish.

While still with the fuselage, you may well assemble the landing gear. Use 1/16 in. dia. wire throughout and solder as indicated to a disc of 1/32 in. sheet brass. The axle end of this is bound with copper wire and soldered as well. This entire assembly is secured in the wheel well using 5-40

The wing panels are of conventional The Wing panels are of conventional construction, using % x 1 in. trailing edge and a % x 1 in. leading edge. All ribs are shaped from 1/16, % and % in. sheet balsa. Wing tips are also % in. sheet balsa. Both upper and lower wing fittings are given on the drawing, four required for the upper panel and two for the lower. Use 1/32 in. sheet aluminum for these fittings. Install them as shown and be liberal with the them as shown and be liberal with the cement. Dowel keys are employed to aline the lower panels to the fuselage root. Shape a 1/16 in. dia. wire as shown and fasten to the panels as shown. Reduce the panels to a Clark "Y" shape, after which a coat of clear dope is applied. Cover the a coat of clear dope is applied. Cover the surfaces with a medium grade Silkspan. Wet down; when dry, brush on several coats of clear dope, with a light sanding after each application. Use 0-0 sandpaper.

Returning once again to the fuselage, we can now complete this unit, using pigmented dopes. The tail surfaces are brushed a light True Blue, the fuselage a White Gray. Black is used for the wing root and



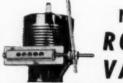
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fairing. Top off with the canopy and strip the fuselage as called out. Mark the assembly with decal numerals and letters also, a squadron marking. Cement the tail strut in place. The wing panels are silver doped with the top surface finished off in yellow. A red strip is painted across the wing as shown. Place the star decals on both upper and lower surfaces.

At this point fasten the lower wing in At this point faster the lower wing in place, using several rubber bands to tie securely. A 10 lb. tension should suffice. Mount the upper panel in place, bolting to the cabane struts, using 4-40 nuts and bolts. All fuselage rigging is 1/32 in. steel wire. With the wing in proper alinement, fasten the "N" struts in place, also using 4-40 bolts. Stretch some fine rubber bands to simulate flying wires. Check the wing again for proper alinement and note proper balance point.

The balance of work is limited to a block balsa cowl and, when completed, is fas-tened to the plywood firewall with wood screws through its aluminum fitting. For realism, we mounted a three-bladed X-Cell 10-6 propeller. Use fuelproof dopes, 40 ft. lines did a fine job.

World Championships

(Continued from page 10)

Director Pete Sotich of the Chicago Prop Nutz), the first event, for A.2 Gliders, got off to a somewhat bleak start under grey showery skies on September 3. Only a handful of the 80 entries (from 21 countries) made maximums in this round, but the skies soon cleared and, in subsequent rounds, plenty of 180's were going up on the score board.

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ifornia

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When it came to the fifth and final round, Germany's Rudolf Lindner was leading with four perfect flights. However, it was still very much anyone's contest since there were plenty of modelers close on his heels—and the thermals were rapidly weakening. Britain's Bob Gilroy and Sweden's Rolf Hagel soon moved up into first and second places with flight totals of 880 and 877 seconds. Thomann of Switzerland could have topped them both with a maximum but only made 130, so that pushed him out of the picture.

It now meant that Lindner had to put

up 161 seconds to beat Gilroy and, when he finally came out for his last flight in the last quarter of the final round, the tension was terrific. By this time, there was ittle thermal activity and Lindner prowled unhappily up and down the towing area, trying to sniff out a thermal—while giving a perfect study of a modeler "who wished be'd flower purch carlier; it the "area". he'd flown much earlier in the round."

After ten nerve racking minutes of this, he

finally got his model up on the line. Not

feeling a thermal, he then proceeded to keep it up there like a kite for at least a full minute by running around the field. Comes a slight tug on the line and he let it slide off the hook into the thermal he's been looking for. Only a weak one, but enough to give him a flight of 166, bring his total up to 886 and win the A.2 Championships for the second year running. A wonderful example of the delayed-

release towing technique at which the Continential glider experts excel-and to us it looked like a must requirement for future A.2 team fliers. Lindner's winning model had V dihe-

dral, a pod-and-boom fuselage, dihedralled stab and a small underfia. His '54 winner had the same actual wings, but a straight T.E. stab, stick fuselage with small nosefin, plus longer tail moment and nose. Giltoy's second place model was unusual for its ultra short (1% in.) nose. Tip dihedral



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was featured, the fuselage was slab-sided and both surfaces were constant chord. Hagel's third place model also had tip dihedral, a slim pod-and-boom fuselage and the stab was mounted atop a small fin.

Herbert Kothe flew an original diamond fuselage A.2 to seventh place for the U.S.A., with a total of 828 seconds, which included three maximums. Sad to relate, the remaining U.S. fliers-Jerry Kolb, Hank Cole and Joe Harris-were 'way down the list (team was 14th out of 23 countries). Hank's model was the most interesting American entry-had sheeted wings and fuselage, very high A/R surfaces and long tail moment and nose.

Although the removal of the minimum cross-section rule in '53 naturally resulted in many stick type fuselages, there still appears to be a good following for the more substantial built-up or pod types. We saw a good sprinkling of such gimmicks as end-plates on wings and stabs, wingtip and nose fins, leading edge turbulators and unsual wing plays edges. usual wing plan shapes.

Designs were so varied, it was difficult to pick out any definite trends, but as re-gards dihedral, tip and poly seem most popular. Stabs were frequently set in front or behind the fin, while auto-rudders (either towline or pin-release) and tipup stab D/T's were pretty well standard. Thin, under-cambered birdlike sections, as on Lindner's model, were fairly popular and in some cases this resulted in sheeted wings to maintain rigidity.

On the second day (September 4), weather conditions were even better than they had been for the A.2 and it was obthey had been for the A.2 and it was ob-vious right from the start that there were going to be plenty of high times recorded among the 74 contestants. Sure enough, the 180's were soon beginning to pile up and by the end of the fourth round, there



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were six men with four maximums to their credit—including Italy's Giorgio Vidossich and Britain's Pete Buskell, who placed third and fourth respectively at the '53 Championships.

As the final round got under way, the thermals were once again beginning to run out but, when all the times were in, three of the leading men—Argentine's Francisco Stajcer, Canada's Bryant Jones and Britain's Michael Gaster—had each managed to pull off yet another maximum, which meant that for the second time in Internats history the winner would have to be decided by a fly-off.

In accordance with the FAI rules, all three had to fly within three minutes of each other. To ensure that spectators kept well clear, the six-man motorcycle recovery squad roared round and round the three finalists like a bunch of redskins attacking the wagon train. This naturally unnerved everybody and held up the proceedings until some of the spectators brought the motorcyclists to heel! It was beginning to get dark by the time the three models finally got away—within a few seconds of each other.

Bryant Jones was eliminated right away, as his timer (which shall be nameless) let him down and gave an over-run. It was now a straight fight between Stajeer and Gaster—and the latter looked like the best bet as he made the greatest height of all three after his usual rocket-like VTO getaway. No official figures are available at the time of writing, but he beat the Argentine modeler by a safe margin to win the '55 contest—both models exceeding the 180

second mark appreciably.

This was 23-year old Michael Gaster's first time as a member of an Internats team, although he is a well known contest flier and holder of the British C FF record. His sleek built-in-pylon elliptical surfaced design has been undergoing continuous development for many years and this particular model was the 14th in the series. A British Oliver Tiger Diesel driving a 9 x 5 in. hand-carved plastic prop, supplied the power. For vertical take-offs, the model rested on two non-retracting wire legs, with the tail dowel providing the third point. It was definitely one of the best looking ships ever to win the Championships.

pionships.

Stajcer's second place model was a simple slab-sider pylon, with constant chord wings and stab (51½ in. span), powered with a K & B Torp .15 (8 in. x 4 in. Tornado prop). Bryant Jones flew a beautifully functional high A/R model (65½ in. span) which, like the winning design, has been developed over many years of contest flying. He used an Oliver Tiger (Top Flite 9x4)—now more than ever the most wanted contest Diesel with FF fans.

Top U.S. man was Otis Goss who placed ninth with 866 seconds. Like all in the American team he used a Torp .15. His model was a straightforward pylon type, with rather low A/R flying surfaces. Harry Gould, who did next best, had a similarly proportioned model with what appeared to be Zipper wings and stab. Bill Hartill (31st) flew an ultra-high A/R design which contrasted sharply with Ernie Shailor's blunt-tipped low A/R entry.

Conventional designs predominated at

or's blunt-tipped low A/R entry.

Conventional designs predominated at this year's Internats (with mainly moderate-height pylons) and Diesels were the most popular powerplants. Twin-finned jobs were not unusual and many wings were of quite high aspect ratio—close to A.2 glider proportions.

Among the more unusual types were Austrian Oscar Czepa forward-fin design (first seen at '53 contest), Australian Bond Baker's high thrust line, twin-fin ship and



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Mexican Carlos de Cosio's raked forward

wing original. Quite a lot of VTO designs

appeared-including entries from Germany, Finland, Austria and Denmark. The only

woman competitor in power was Maria

Rudolph of Germany, who played near the

place on September 5-again under ideal weather conditions-with 70 entries from

19 countries. Maximum flights of 180 seconds were commonplace this year and totaled just under half of all the flights recorded!

At the end of the fifth round, there were

The final contest for Wakefields took

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top in eighth place.

cenzo Scardicchio of Italy; Anders Hakansson of Sweden and Emile Fresl of Yugoslavia. This all added up to the most exciting climax to any Wakefield contest to date.

All seven models got away safely in the fly-off, but by this time the light was failing fast and eventually all were clocked off out-of-sight, with Gustav Samann's entry putting up 315 seconds to secure Germany's second win at the Championships. Just 26 seconds behind him was Anders Hakansson of Sweden, whose country headed the team result in Wakefield. Next came Scardicchio, Altman, Fresl, Fea and Muzny-in that order.

Samann's winning model was a simple sheeted slabsider, with a slightly tapered V dihedral (pylon mounted) wing and a single-finned constant chord stab. He used Pirelli rubber and a double-bladed folding prop. An unusually long take-off leg gave the model a 24° ground angle. The design is well known in Germany, as it has already won three German Nats and numerous other major contests.

Hakansson's model also had a slabsider fuselage and a V dihedral wing. He used Dunlop rubber and a freewheeling propnot a folder. Design points in common shared by the top seven models were that all had square or diamond fuselages, twobladed props, single 'fins and peg leg take-off gears. With the exception of Samann and Hakansson, all used polyhedral wings. Apart from Hakansson, the others used two-bladed folding props and Pirelli rubber.

The U.S. Team did well in Wakefield. with Bob Champine in 11/12th place,

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seven contestants with five-flight maximums of 900 seconds, tying for first place. These were Ladislav Muzny of Czechoslovakia; Josef Altmann and Gustav Samann of Germany; Guido Fea and Vin-GLOSTER GLADIATOR' SPAN - 32' 3" LENGTH - 27 5" TOP SPEED - 250 MPH. ENGINE - 840 HR BRISTOL MERCURY IX SECTION - INCIDENCE C-C SCALE - FEET

Herbert Kothe in 13th, Manuel Andrade in 18th and Gene Schaap in 20th. All four put up maxs in the first three rounds, after which the luck turned against them. In the team results, the U.S.A. placed third. Gene Schaap used a single-blade folding prop and the others had two-blade folders. Bob Champine's model featured a diamond

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leg SaBob Champine's model featured a diamond fuselage and the remainder were square. On the whole there were few really unusual Wakefields at the '55 contest, the strangest being Frenchman Marc Chevrlot's entry with its ultra-small butterfly stab. Australia's Alan King and Bond Baker flew two beautiful streamlined fuse-Baker flew two beautiful streamlined fuse-lage, twin-finned jobs, but both were out-of luck—Alan wrecking his model when it hit another contestant on take-off in the final round. Hugh O'Donnell (second in '53) dropped 24 seconds on his only "less than maximum" flight to place 15th— which gives you an idea of just how hot the competition was at this year's Cham-nionshins. pionships.

pionships.
Finally, it's obvious that the present flight maximum" should be put back to 300 seconds (still five flights), since 180 is much too low in the light of this year's experience. And take our tip—if you have a go at making the next FF team, the first thing to do is get a clockwork timer Then, and only then, can you turn your attention to the next most important item—the engine. After all, having the hottest motor in the world does not mean a thing if you're never sure what engine run you'll get from flight to flight. Ask Bryant Jones—he'll tell you!

Engine Review

(Continued from page 34)

as a competition engine. However, it will undoubtedly find a big welcome in the radio field where the effect of vibration upon relays, etc., is a serious headache, and also among the increasing army of scale enthusiasts where its greater realism and low frontal area per cu. in. are a gift for in-line engined proto-types. Apart from this it will surely find a place in the hearts of all true enthusiasts for its neatness and exquisite noise and simply for the fact that it is a twin. With the diversity of parts and accessories available which go to make up the Fury range of aircraft and marine engines, it will be a comparatively simple matter for ingenious people to make up multiples of the twin and in fact make in-line engines of the required number of cylinders to suit a particular scale model.

There is a limit to what the crankshaft will transmit, but it would be intriguing to find out where that limit lies.

The construction of this new engine is very interesting and in particular its solution to the problem of avoiding the split conrod bearings of the car engine. This question of split bearings is probably the biggest reason for the delay in the appearance of low cost multis, as they add considerably to the amount of high precision work included in the production of a model engine. Another reason has been that until recently the piston and cylinder assembly have been considered the meat in the cost per unit so that a twin meant to the manufacturer the proposition of trying to make two engines for very little more than the price of one. The use of glow ignition with its less stringent requirements in the way of piston clearance, plus modern production methods, has eased this situation, and now that the ice has been broken it seems likely that the multi age is upon us at last.

The crankshaft of the Allyn engine is in

two parts, the front portion being similar to any conventional shaft but lacking any valve port or crankpin. A prop driver in gold ano-dized aluminum of moderate proportions is

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mounted by mating tapers at the front, and a tapping receives the prop retaining screw. The rear portion of the shaft is similar to two short conventional front rotary shafts joined together at 180° so that the crankpins are opposite instead of adjacent, and the two rotary valve ports are opposite radially but staggered longitudinally, with their passages drilled from each end and a solid portion of shaft separating them. The load is taken by this part of the shaft in a short main bearing housing which forms the backplate of the front crankcase, and the frontplate of the rear crankcase. This housing is split across its center line for assembly purposes and the two halves are connected by a dowel bolt on either side of the bearing. The upper half incorporates the single carburetor, the intake of which opens out to an oblong port in the bearing, in order to line up with the two staggered shaft valve ports. The mating faces of this split housing are lapped to form a pressure tight joint and the holes for the dowel bolts are an excellent fit, allowing virtually no misalinement of the bearing halves. Not the simplest job to produce by any means. The conventional rear crankcase backplate, the two crankcases and the various joint gaskets are held together by long tie bolts, passing through three sets of lugs on each component, which also serve for radial mounting of the engine.

The cylinder block crankcase castings are similar in appearance though slightly larger than the .049 castings and the same type of cylinder liner and screwed-in head are employed. The cylinder liner has a somewhat thinner wall thickness than that of the .049, and instead of four bypass grooves, has two of greater width.

The piston design is improved by having a captive wristpin instead of the ball joint. This is accomplished by fitting the wristpin and rod to an aluminum sleeve which is swaged over a boss inside the piston thus making a permanent assembly with the wristpin located inside the piston walls and avoiding the leakage path of holes in the piston skirt.

The front crankpin has a small extension similar to that which drives the power takeoff on the outboard motor, which engages in the slot in the disc of the front section of the crankshaft which takes the place of the normal type of crankpin. It will therefore be seen that all this front part does is transmit torque and provide a bearing for the prop. The rear portion takes the load of both pistons and since they fire alternately 180° apart, the bearing is relieved of some of the tendency to rock under combustion pressure of one cylinder by the compression pressure of the other. It therefore works under more favorable conditions than the shaft of a singlecylinder engine. It might be expected that the pin-in-slot coupling between the two parts of the shaft would wear considerably, but in fact after some four hours of heavy going, only a slight contact mark was visible. The clicking noise which can be heard when flipping the prop stems from this coupling, but, where it would be a cause for concern in a conventional engine, it is normal in the twin and nothing to worry about.

Operation and Handling

Perhaps the most common question concerning this engine will concern its starting qualities. The example tested was very easy to start cold, but was very difficult to start when hot because at high temperatures there was no compression at flipping speed. Judging from the amount of blowby indicated by the color of the piston after running, and a quick check with the micrometer, the pistons in this particular example were not up to snuff as regards ovality. A squirt of thick oil through the exhaust ports helped matters considerably, and we had the impression that

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were it not for the lack of compression, this engine probably would be almost twice as easy to start as a one-lunger.

On a heavy prop we found it possible, at the expense of much energy, to start the twin on one cylinder, and then cut the other in with a touch of the battery lead. However, it is not easy. The best way to cope with the battery problem seems to be to tack-solder a piece of wire between the two plugs and then use a normal clip on one plug. This piece of wire can be clipped around the plug terminal if desired, but can be left permanently in position. The battery will, of course, run down twice as quickly with two plugs to heat, so it is advisable to double up in parallel on your normal equipment.

We got a special kick out of running this engine slowly on a big prop because it takes so much more smoothly than a single. However, the length of overhang is excessive and with the rocking couple from the to and fro power impulses, it would seem preferable to have beam mounts. A beam mounting adaptor is available as an accessory, but is still attached to the engine via the radial bolts.

When first running the engine, it is a good idea to tighten the heads down when hot, as they will loosen up during the first runs. We also found that the props had a tendency to come loose because the prop driver is on the small side, and with average props the retaining bolt supplied was a bit short.

The needle valve is delightful and the engine will run over a considerable range of settings with about a quarter-turn covering the full power limits with the tank on the center line of the jet.

All things considered, this is an exciting engine with good wearing properties, good manners and loads of possibilities, and is certain to please.

TEST: K & B Allyn Sky Fury .15 Twin

Plugs: Allyn 1/4 x 32 long reach as supplied; Fuel: Supersonic 1000; Running Time Prior to Test: Three hours; Bore: .485; Stroke: .405; Weight: 2¾ oz.

Power Prop	RPM
8 x 6	11,000
7 x 6	12,200
7 x 4	13,100
6 x 5	13,500
6 x 4	14,400
6 x 3	15,500
Top Flite	
8 x 6	9,900
7 x 6	11,100
7 x 4	12,000
6 x 5	12,300
6 x 4	13,100
6 x 3	14,000
THE END	

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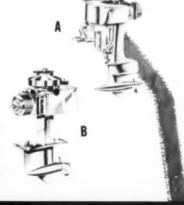
Gíve Yourself

Think of the fun you can have with one of these beautiful Allyn Craft Runabouts! You'll enjoy the thrill of launching the latest in boat design its trim, low lines assures you of smooth, speedier travel. Its sturdy con-struction permits lasting durability with just a reasonable amount of care. Designed for use with either an inboard or outboard engine, you have a choice of power units.

Allyn	Craft	Runabout	Kit, Outboard (less engine)	\$	4.95
Allyn	Craft	Runabout	Kit, Inboard (less engine)		4.95
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Speaking of outboard and inboard engines—the Sea Fury Outboard and Sea Fury Inboard were the first internal combustion engines designed for model boats. Their superiority to any other engines, has been proven time and time again. Every part is made with all the care and precision given to the finest piece of machinery. You can't do better than a K&B Allyn

A	Sea Fury	Outboard Single	\$9.95
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	Supersonic	"100"	.50	.80
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The fame of the well known Torpeilo engines with their ever growing long list of National and International wins leaves no question as to their superiority in the model aircraft engine held. The "Choice of the Champions" yet their versatility makes them equally good for beginner and veteran alike C Torpedo 15—\$10.95, 19—\$13.95, 23—\$13.95, 29—\$15.95 29R—\$15.95, 35—\$15.95
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"36"-\$12.95

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"Micro-Five" slug pistons — "McCoy's Military Secret"—in McCoy Super Stunt engines are machined and micro-

of 5 millionths of an inch—in both concentricity and size. This assures perfect fit of every McCoy piston and sleeve, interchangeability of parts, and minimum break-in. New fuel flow system gives 17-inch fuel draw for smooth, even running during stunt or combat maneuvers. It's here! The new McCoy Super Stunt "19" is at your dealer's... ready to fly. And inside this engine is the "Micro-Five" slug piston proven so successful in the larger "29" and "36" Super Stunts.

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You're flying high when it's McCoy powered!

If you fly in the ½A closs, you're ready for a larger engine . . . make it a McCoy Super Stunt. And if you want to fly ¼A, you'll get the same easy starting, dependability and traditional McCoy power in the sensational new McCoy .049 Glo engine.





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